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Seeing Through 1931

HERE is a factual account of the major activities during the past year in the struggle for conservation of vision

IT IS with much satisfaction that the National Society for the Prevention of Blindness looks back on a year of achievement. Experience is indicating the relationship between conservation of vision and the fields of public health and education. Such relationships will be apparent in the accounting of activities for the year 1931.

Preventing Eye Troubles in Babies

Blindness due to ophthalmia neonatorum in new admissions to schools for the blind was reduced from 9.2 per cent in 1930 to 7.5 per cent in 1931. In 1907 there were 28 per cent blind from this cause alone. Thus, over a period of twenty-four years, a reduction of 73.4 per cent has occurred in the incidence of ophthalmia neonatorum, one of the most serious causes of blindness.

The most potent agent in the reduction of this disease has been the increased use of prophylactic drops in the eyes of newborn infants. Because of reports from various sources that silver nitrate used as a prophylactic in the eyes of babies at birth was not always reliable, the National Society, in co-operation with the State and Provincial Health Authorities of North America, has begun a study to determine: (1) Changes taking place in silver nitrate, stored in both glass and wax containers over varying periods of time; (2) effect of light and darkness upon changes in the solution; and (3) chemical effect of container, whether beeswax or paraffin, upon the stability of the solution. Thus far it has been found that beeswax containers have a chemical reaction with silver nitrate, and investigation is being made to find a container that will not change the chemistry of the solution, after which recommendations may be made for

the manufacture, storage, and distribution of silver nitrate of unquestioned quality and purity.

Syphilis as a cause of blindness at any age is recognized, and the Society emphasizes the necessity of prenatal care and treatment in order to prevent blindness or defective vision through this cause. In this phase of its campaign it co-ordinates with the activities of the American Social Hygiene Association.

Caring for the Eyes of Preschool Children

As a result of the National Society's study of the eyes of preschool children, doctors and educators are increasingly urging that vision be tested before school days begin so that the child has a fair start. A practical application of this principle was made when a representative of the National Society assisted the prevention of blindness department of the Pennsylvania State Council for the Blind in testing the vision of 8,000 children. In one city alone, of 1,848 children examined (mostly between the ages of four and seven), 473, approximately 26 per cent, were considered to have sufficiently serious eye difficulty to warrant ophthalmological examination; 200 others were recommended for reinspection. The importance of preschool vision testing is no longer questioned.

During the year, 103 demonstrations of vision testing were given before 6,789 school and public health nurses, teachers, doctors, and social workers, in nine states and 42 cities. The National Society undertakes demonstrations for vision testing primarily to stimulate an interest locally in the subject so that communities may be qualified to undertake the responsibility of preschool vision testing for themselves. In order to determine the efficacy of the preschool vision testing demonstrations undertaken in the past few years by the Society, an inquiry was recently sent to 3,100 nursing organizations. Of 1,681 who answered the questionnaire, about 40 per cent were testing vision in the kindergartens and primary grades.

Eye Accidents in Childhood

At the instigation of representatives of the medical profession who had noticed a frequency of preventable accidents in childhood through the use of carelessly selected playthings, the National Society undertook a study of eye accidents in childhood. A summary was made of the eye casualties reported in the newspapers of the

entire country during the months of June, July, and August. In the city of New York a separate inquiry was made of special eye hospitals and of general hospitals having large eye departments regarding cases coming under treatment during the same period. The latter check-up served somewhat as a test of the completeness of the newspaper reports. To the governors of all states, to the mayors of cities with a population of 50,000 or more, and to the executives of local safety councils, the Society addressed a request for information concerning the legal provisions for prohibiting or regulating the sale or use of air rifles or similar devices.

The estimated annual total of cases noted in the newspapers, based on three months' experience, shows from 750 to 1,000 accidents. The estimated distribution of children's eye accidents, by causes, was: weapons, 31 per cent; fireworks, 23 per cent; explosives, 10 per cent; sharp-pointed objects, 11 per cent; flying particles, 8 per cent; games and sports, 5 per cent; automobile accidents, 3.5 per cent; falls, 3 per cent; burns from chemicals or hot objects, 2 per cent; and other causes, 3.5 per cent.

Of 183 cities with a population of 50,000 or more, 134 replied. Of these, 76 per cent have some regulatory provisions covering one or more articles in the weapon group. However, this must be largely discounted because there are so few cities in which the regulations are either specific or broad enough to cover all types of weapons which are causing eye accidents. In addition to improved legislation to prevent eye accidents in play, there is need for continued education of both children and adults concerning the eye hazards that are inherent in many objects which children commonly use in their play. In this campaign, the National Society continues to be actively engaged.

Conserving the Sight of School Children

An outstanding project, undertaken during the past year in cooperation with the department of education of Columbia University, is a study to determine what effect reading actually has on the eyes—whether there is such a thing as a saturation point beyond which the eye suffers, no matter how ideal the factors of lighting or good sight are. The importance of the results of this study, especially to school children, cannot be overemphasized.

Further activity in the interest of the eyesight of school children has been the National Society's participation in the revision of the Code for Lighting School Buildings. A representative of the Society is an active member of the committee especially selected by the Illuminating Engineering Society to determine and set up lighting standards in schools. A preliminary revision of the Code is already in print and the final report is expected shortly.

Sight-saving classes, especially designed for children with such seriously defective vision that they cannot attend the regular classes, continue to demand much of the National Society's attention. The growth in the number of classes, from year to year, is slow but steady. From the two which were begun almost simultaneously in 1913, the number has grown to 398 in 1931. It is estimated that more than 4,600 such classes are still needed to take care of all school children requiring this special kind of teaching. The demand for teachers has been so great that four summer session courses were given, through the co-operation of the Society, at the following places: Columbia University, New York City; State Teachers College, Buffalo, N. Y.; Tulane University, New Orleans, La.; and the University of Chicago. In a number of instances the Society was consulted in the placing of teachers and supervisors of sight-saving classes.

Activities in connection with the White House Conference on Child Health and Protection have been continued in 1931. The report of the section on Special Education is already in print. In this volume the National Society shares the responsibility for the section on the Partially Sighted. As a result of the Conference, local conferences are being held, and the National Society is called upon in planning and participating in those aspects concerned with the eyesight of children.

Conserving the Sight of the Worker

"One hundred per cent eye protection in industry" has been an aim of the National Society in its program for conserving the sight of the worker. With this in mind, a self-appraisal form was drawn up with the assistance of a committee of eminent men in the field of industrial safety, which, if conscientiously applied, will result in securing 100 per cent eye safety in industry. Upon its appearance

in print, one state commissioner of compensation was so impressed with the possibilities of this program that he requested 10,000 of these pamphlets, at cost, to distribute among the industrial plants of that state. It is hoped that the results secured will serve as a basis for national application.

Continuing its policy of co-operation, the National Society participated with the Metropolitan Chapter of the American Society of Safety Engineers, the National Safety Council and other organizations in the planning of the Third Annual Greater New York Safety Conference, which will take place in February, 1932. Two staff members were appointed to two different committees in the arrangement of the conference, a part of which will be a special session on "The Eye—Its Relation to Safety," under the chairmanship of the managing director of the National Society for the Prevention of Blindness.

Of some import to this aspect of the work was the request for a representative of the Society to present a paper on "What is being Done to Protect the Eyes of Industrial Workers? And What More Needs to be Done?" before the joint meeting of the Section of Ophthalmology of the New York Academy of Medicine and the American College of Surgeons. The transcript of this paper appeared subsequently in a number of magazines having widely diversified circulation.

Research and Demonstration Projects

In addition to the studies discussed in other sections of this report, the Society has during the year continued its studies along the lines enumerated below.

Medical Social Eye Work.—Under the supervision of a specially appointed committee on medical social eye work, a co-operative project was undertaken with the Massachusetts Eye and Ear Infirmary. This consisted of the training, in medical social eye work, of a limited number of medical social workers, on scholarship, in order that they may be placed in different communities to demonstrate the increased efficiency of eye clinics with the addition of such trained personnel. An experimental first course has already been given at the Massachusetts Eye and Ear Infirmary and several workers have been placed by request in strategic localities. Suffi-

cient encouragement resulted to justify continuance of this project in the form of a second course for training another group.

The Society's co-operation with the medical social service section of the Welfare Council of New York City and the Associated Out-Patient Clinics included the completion of the series of study conferences on various eye conditions. So useful have the notes of the meetings been found that a mimeographed report of them has been made available; and some of the discussions, especially by doctors, have been published in various magazines and reprinted for distribution.

The Committee of Medical Social Eye Workers, which was organized in June, 1930, has, in accordance with its plans, published its bulletin semi-annually in May and November, 1931, presenting topics of particular interest to the group.

Glaucoma.—The Massachusetts Eye and Ear Infirmary is carrying on its study to determine the effect of adequate follow-up in connection with glaucoma patients, made possible through the co-operation of the National Society. The latest report available indicates a continued high registration of glaucoma patients, due, it is felt, to the efforts of the special medical social worker provided to handle and follow up glaucoma cases.

Causes of Blindness Study.—In an effort to ascertain definite information on the incidence and causes of blindness, the National Society is co-operating through membership in a committee on central statistics of the blind. This committee includes in its membership representatives of organizations working with the blind and for prevention of blindness, as well as members of the medical profession, social workers and statisticians. Tentative forms have already been set up with the hope of planning procedures whereby fundamental statistical data may be obtained regarding the blind which will be comparable throughout the country and which will serve the needs of all groups.

Public Education

Among the most important projects of the National Society are its public education activities, which include: Lecture and letter service; the preparation and distribution of literature; provision of exhibit material, films and slides; and publicity service.

In order to have some idea of the demands made on the Society for information, one need only consider that during the past year alone 24,000 letters were sent in answer to inquiries and in giving necessary information on conservation of vision. Staff members have visited 23 states and Canada, and have spoken in 62 cities. In addition to eleven radio talks given, many thousands of people were reached in 290 lectures given by representatives of the National Society throughout the year.

The publication of the new quarterly, THE SIGHT-SAVING REVIEW, has met with acceptance from a wide circle of readers and approval from the press. It has a limited, paid subscription list. The *News Letter*, hitherto published five times a year, was issued but once. Almost a quarter of a million pieces of literature were distributed. More than $2,600 was received in payment for publications sold in quantities, at cost, showing a definite and serious interest in the literature. Thirty-two new reprints were published during the year, largely from THE SIGHT-SAVING REVIEW.

The National Society conducted an aggressive but discriminating publicity campaign through which it sought to acquaint the public at large, and certain special groups, with the main causes of blindness and the best known means for their elimination. Newspapers, magazines, trade journals, and many other types of periodicals cooperated during the past year in this endeavor.

As usual, the Society was called upon to provide exhibit material, films and slides, for many community conferences and meetings. Twenty-eight exhibits were requested; and 24 sets of slides were borrowed. The films distributed by the National Society, "Through Life's Windows" and "Preventing Blindness and Saving Sight," were loaned on request 32 times during the year. That does not in any way indicate the number of showings, however, as in one instance alone the moving picture was exhibited 12 times. Much favorable comment has been received on the latter film, which is the newest on the subject.

The Evolution of the Cataract Operation*

William Campbell Posey, M. D.

THE author traces the steady increase in knowledge regarding cataracts since the operations of Dr. Jacques Daviel, the French surgeon who pioneered in this field 180 years ago

THE average layman believes cataract to be the disfiguring opacity observable upon the eyes of some with poor vision. He has the idea that cataracts grow upon the eyeball like a kind of skin, and slowly cover the sight like a curtain. Cataracts, however, are found not upon the eyeball, but within the globe; they consist of an opacification of the crystalline lens—that structure which, when clear, enables rays of light to be brought to a focus upon the retina. Once an opacification of this structure occurs, light rays are excluded and vision is impaired.

To the casual observer, the eye blind from cataract presents nothing abnormal in its appearance; the opaque lens, being situated within the eye and behind the pupil, requires closer inspection for its detection. The term "cataract" was given this condition in ancient times by those who thought that the opaque area which blocked the pupil was due to some substance which, cataract-like, had poured down from the posterior part of the eye and covered the pupil.

Many have been the attempts through the centuries to rid the eye of cataracts. All kinds of medication have been essayed—electricity, trituration of the globe with various agents, massage, as well as the administration of drugs internally. All have failed, and it is common knowledge that surgical intervention alone can rid the eye of cataract and permit the passage of light rays into the eye.

* Presented at the Annual Meeting of the National Society for the Prevention of Blindness, November 19, 1931.

In early years native practitioners, the earliest surgeons, found that sight could often be restored by inserting a needle-like instrument into the eye and, by pushing the opacity backward, clear the pupil. While in some instances the restoration of sight following this procedure was lasting, in most cases the lens which had been severed from its attachment too often acted as an irritant and occasioned inflammation in neighboring ocular structures which subsequently destroyed the organ. This method of restoring sight, termed "couching," was the only one employed until the 18th century. By that time surgical methods had improved and the knowledge of anatomy had been greatly extended by means of dissection.

First Lens Extraction by Jacques Daviel

The first figure to arise in the history of operative ophthalmology was that of Jacques Daviel, a French surgeon who relinquished the crude and uncertain method of couching and actually removed the opaque lens from the eye by cutting into the globe and removing the cataract. In a brilliant communication addressed to the profession in 1752, Daviel reported a series of cases in which cataracts had been permanently cured by his method, a great gain over couching. This was a tremendous step in surgery, and to Daviel must be given the honor of the discovery and invention of the modern method of the removal of cataract by "extraction," for while the technique of the procedure has undergone many variations and has been greatly improved, the essentials of the method proposed by him remain. Following Daviel's lead, other surgeons employed his method with modifications, some good, some bad, but all devised by clever surgeons in an effort to obtain the best results possible and to perfect the extraction method. Many employed knives of their own device to make the incision into the eyeball. One authority, writing in 1821, computed that there had been 69 different knife models in use up to that time. Various, too, were the methods employed by different operators in meeting various complications encountered while operating. The literature abounds with their communications.

Efforts to render the cataract operation more successful were not confined to one land—French, German, Austrian, English and

Italian surgeons were all busily engaged. Though many still adhered to the couching method as simpler and safer, a number of surgeons from our own land, notably from New York, Boston and Philadelphia, were removing cataracts from the eye by extraction during the early part of the 19th century. The eye surgeons of these three cities were chiefly under British influence and had been trained in London and Edinburgh. Thus, the three oldest hospitals devoted to diseases of the eye which have persisted—the New York Eye and Ear founded in 1821, the Massachusetts Eye and Ear in 1824, and the Wills Eye Hospital in Philadelphia in 1832—were established through British influence. The two former were established by men who had received their ophthalmic training in Moorfields Hospital, London, established in 1805, while the Wills Eye Hospital was established indirectly by men who had been pupils of Physick, the professor of surgery in the University of Pennsylvania, who had been educated in ophthalmic as well as general surgery in London and Edinburgh. This famous surgeon, acclaimed "the Father of American Surgery," must be credited with implanting the love of ophthalmology into two of his earliest students, Elisha North of Connecticut and George Frick of Baltimore. His influence caused each to establish an Infirmary devoted to the treatment of diseases of the eye, the former in New London in 1817 and the latter in Baltimore in 1823. Both of these institutions, however, survived but a short time. The creation of five separate infirmaries, at the same period, 100 years ago, in as many different American cities, indicates America's early activity in treating ocular diseases.

Needling

Another and much practised method 100 years ago of ridding the eye of cataract, in addition to couching and extraction, was by "needling." It had long been remarked that, if the delicate structure which normally covers the lens, the capsule so called, was injured, and the fluids within the eye permitted to have access into the lens structure, the substance comprising the lens gradually melted away. This had long been common knowledge after injuries involving the lens. In young subjects in whom the lens is soft the needling method was often successful and is still in general

use. But in adult life the lens hardens and the intra-ocular fluids no longer have the power of causing its rapid absorption, so that this method was gradually abolished in adults and gave way to extraction.

Incision into the Globe by von Graefe

Despite the general excellence of the extraction method and the improvement wrought in the operation since its discovery by Daviel, it was far from perfect. Many eyes were lost though operated upon by surgeons of the greatest skill. Often the incisions which were made in the eyeball to permit the removal of the cataract did not heal. To prevent this, many were the deviations from the incision first practised by Daviel and, as we have seen, many knives of different shapes were invented to make the cut into the eyeball. But all were to no avail. Then, in the middle of the last century, just about a hundred years after Daviel's discovery, a second figure appeared in the ophthalmic world in the person of Albrecht von Graefe. Graefe was a man of transcendental genius who completely transformed the practice of ophthalmology and was the means of saving the sight of countless thousands. This remarkable man, the son of a great surgeon, was born in Berlin in 1828, of a noble family. Educated in his native city, he came by chance under the influence of Arlt, one of the most noted ophthalmic surgeons of his time. Arlt was professor of ophthalmology in Prague, where von Graefe went to perfect himself in general medicine and surgery. Of humble birth, but of fine character, Arlt was of such excellence as a surgeon that Graefe became much impressed by him, and through his influence, turned toward ophthalmology.

Fortunate was the chance, indeed, which brought these two men together and fortunate was the circumstance that at this time there were other great minds devoting themselves to ophthalmology. The period has well been called the "Golden Age of Ophthalmology." It saw the discovery, by von Helmholtz, of the ophthalmoscope, that wonderful instrument by which the physician is enabled to look into the eye and to study changes, both physiological and morbid, which occur there as well as elsewhere in the body. Donders, a Dutchman, was elucidating the problems of the refraction of the eye dealing with the theory and practice of measurement

for glasses. The great English surgeon, Bowman, lived at that time also. These men of different nationalities were all friends, and all conferred together. There were no jealousies or international differences to separate them. All were united in their interest in ophthalmology and their desire to help humanity.

This paper has to deal with cataract and must be confined to that subject, but before describing the revolution wrought by Graefe in that operation, attention must be called to what the world owes him by his discovery of the curative effects of iridectomy in glaucoma. Prior to 1854 glaucoma, or hardening of the eyeball, as the layman knows it, meant blindness. Graefe, by the operation, which he devised and practised, showed that glaucoma was often curable. This was one of the outstanding discoveries in surgical science. His great contribution to the cataract operation was the incision into the globe he devised and the knife with which he made it. Both, the products of long study and based upon precise mathematical calculation, enable the surgeon to remove cataract from the eye through the smallest incision possible, thereby facilitating prompt healing of the wound by the perfect coaptation of the lips of the wound. This operation, eighty years after its discovery, is still that of choice of most operators the world over.

Naturally enough, surgeons from all parts of the world flocked to Europe to see him and learn his methods. Veritable pilgrimages were made to Berlin and many from our own land visited Graefe's clinic as well as the laboratories of Helmholtz and Donders. Graefe died all too young, in 1870. There seems to have been no subject in ophthalmology with which he was not familiar, none concerning which he failed to record his written opinion. Investigator, author, surgeon and clinician, he earned universal homage.

Removal of Lens in Its Capsule by Pagenstecher Brothers

When speaking of the needling operation, mention was made of the capsule of the lens, a delicate membrane which encloses this structure and which remains in the eye after the cataract is removed. This frequently necessitates a second operation, for in cataracts it too is opaque and often partially blocks the pupil after the main body of the lens has been removed. It often acts as an irritating as well as a mechanical factor to mar the success of the operation.

In the latter half of the last century the endeavors of some surgeons were directed toward perfecting a procedure which would enable the lens to be removed in its capsule. By this time, anesthesia had been introduced, the freedom from pain afforded the patient enabling the operator to perform the delicate steps of the procedure with greater freedom and precision than was the case in pre-anesthetic days. The blessing of antisepsis, also introduced at this time, greatly lessened the risk of infection. Though the operation of the removal of the lens in its capsule had been essayed a century before, it remained for the brothers Pagenstecher, of Weisbaden, to devise and perfect a method with which they had great success.

Conservative surgeons were chary of the procedure, for it was often attended with loss of the vitreous humor, a semifluid structure filling the posterior part of the eye and necessary to its conservation. The method became popular, however, in India, where the vast number of cases at the command of the surgeons enabled them to obtain a skill in operating not possible with a more limited number of patients. Thus, at the commencement of the present century, there emerged a British surgeon who had long been a resident in India. This surgeon, Col. Henry Smith, devised a method of his own for removal of the lens in the capsule and reported an overwhelming number of cases upon which he had operated with gratifying success. Particularly kind and gracious to our countrymen, Col. Smith invited many to visit him at his clinic at Amritsar and afforded them the opportunity of operating, under his direction, upon a large number of cases. Later on, Smith came to this country and demonstrated his method. But, despite his unusual skill and the excellence of his demonstration, the procedure seemed to be attended with too much risk of vitreous loss to become popular. There is much to commend in the removal of the lens in its capsule, however; and a modification of Smith's method, recently devised by Arnold Knapp of New York, gives promise of greater safety and better ultimate results.

Removal of Lens by Suction

Another method of removing the lens in toto is practised by Barraquer of Barcelona, who removes the lens within its capsule by

suction. A cleverly constructed apparatus furnishes the suction, and, after the customary incision has been made into the eye, a delicate spoon-shaped instrument attached to this apparatus is inserted through the cut and the lens carefully withdrawn. The operation demands a great deal of skill in the use of the apparatus. Otherwise the iris as well as other important parts of the eye may be caught in the suction and the eye lost.

The last word has yet to be said regarding the cataract operation. Many surgeons the world over are striving to perfect the removal of the lens and to lessen the losses from the operation. The speaker wonders if the lay world appreciates what that means. Does it realize through what a long course of training the eye surgeon passes before he is qualified to practise? Most medical schools of high type demand a college degree before a student takes up the study of medicine. Then come four years of hard study in all branches of medicine and surgery, followed by at least a year of hospital internship, during which the young doctor studies and treats disease in all its phases. This done, he must devote two more years to the study of the eye and its diseases before he can be qualified as an ophthalmic surgeon—a long and costly apprenticeship for our young surgeon. If he would operate, he must be sober and righteous, he must eschew all habits which might tend to impair his nerve or the delicacy of his touch.

Sometimes the operation is unsuccessful through no fault of the surgeon. Consider the nature of the organ upon which he is called to operate. As part of the general organism it is subject to the diseases of the body, and a skilfully performed operation may have its result marred by an inflammation coming from some other part of the body which the surgeon is unable to control. Again, a reasonable period of rest and quiet is essential after a cataract operation. Some patients are so habituated that the surgeon finds it difficult to obtain proper relaxation upon the part of the patient, and the success of the operation is again marred. Skilful nursing is, of course, an essential part of the cataract operation.

When performed by carefully trained and skilled surgeons the removal of cataract is now almost universally successful, the best surgeons obtaining useful vision in more than 95 per cent of their cases—a great advance over the results Daviel obtained 175 years ago when this field of eye surgery was first begun.

What Canada Sees

Mary C. McLelland

THIS is another in the series of articles we are publishing to show how the various states of the Union and Canada are meeting the responsibility to guard the eyesight of their citizens

THOUGH Canada is not exactly a "wild and frozen region to the North," which an American ambassador once humorously insisted was the opinion of his countrymen, yet it still labors under the handicap of a wide expanse settled by a comparatively small population. This population of over 10,000,000 is spread over 3,750,000 square miles. In the maritime provinces, New Brunswick, Nova Scotia, and Prince Edward Island, it is fairly evenly distributed, from one end of each province to the other. Ontario and Quebec have between them well over half the people in Canada. Enormous patches of territory to the north receive only scattered pioneers or are uninhabited. We are not surprised then to realize that Canada has no city which has reached the 1,000,000 mark in size, only two cities are over 500,000, only seven over 100,000 and only 15 altogether over 60,000. In fact, three-fifths of Canada's people are not found even in towns, and can therefore only be called rural.

Difficulty of Health Supervision in Canada

These statistics are significant when we consider general health supervision. It will be seen at once what a complicated problem it is for a Provincial Department of Health to extend any kind of a regular health service through a province, or any service at all in some of the outlying districts. Only three of the provinces, British Columbia, Manitoba, and New Brunswick, are able to provide a complete yearly medical inspection of all school children; two others manage a complete inspection periodically; the other four

can concentrate only on the larger centers, with occasional excursions into the interior. Defective vision is not always classed separately. Sometimes it is omitted in the physical examination, the eyes being tested only at the beginning and near the end of public school life. Sometimes only children who are obviously suffering from an eye defect are referred to the nurse or doctor for examination. It is exceedingly difficult, therefore, to determine accurately the extent of the need for conservation of vision in Canada, to obtain statistics on the amount of defective vision in various provinces, or to locate serious cases in rural areas. In addition, it is a costly undertaking to arrange for transportation and treatment across the long distances, when it is felt necessary, even supposing the financial position of the family can be correctly ascertained.

Responsibilities of the Canadian National Institute for the Blind

The Canadian National Institute for the Blind, which conducts a prevention program, was founded in 1918 to serve the war and civilian blind. Later it amalgamated with local agencies working for this purpose, establishing headquarters in Toronto, and various branches throughout Canada. It is a private philanthropic organization, receiving a grant from the Federal Government for national administration; for the varied services it renders in provincial areas it receives approximately 50 per cent from the Provincial Governments, plus special donations; and the remainder from the general public. Its activities in the field of prevention may be said to be the only dominion-wide organized effort of this kind, outside of the routine work of dominion and provincial departments of health. While the Institute has tried to adhere to a general rule of providing treatment for cases of 20/70 or less (before correction), where the family cannot pay and no other organization can be found to assist, it is forced to exercise considerable latitude in carrying out the prevention part of its program because of cases in rural areas where an accurate test is impossible, and where they must be brought to a center before correct visual acuity can be determined. Furthermore, it assists any urgent case, such as progressive myopia, squint, etc., of any degree of vision, when necessary.

Prevention of Ophthalmia Neonatorum

It may be interesting to note how Canada stands in regard to the laws and practices which particularly affect vision, and where the Institute can give service. A statute has been passed by the Dominion Council of Health on the recommendation of the Provincial Health Officers that drops of silver nitrate (provided free by the Provincial Board of Health) or any other approved preparation, shall be used in the eyes of every infant at birth, and that cases of ophthalmia neonatorum must be reported as soon as noticed. This has actually been put into law in only six of the nine provinces as yet. Four provinces use a physician's notice of birth which contains a question asking if drops have been used, and two more are expected to follow shortly. There remains but one province, therefore, without either the law or the question. Even where no law exists regarding the use of prophylactic drops, the practice is, of course, strictly observed in all hospitals, taken for granted only in private homes. The Institute for the Blind and the Canadian Council on Child Welfare press continually for both the law and the question. The incidence of known ophthalmia neonatorum in the present health reports is very small, but as the health supervision is covering more and more area each year, and as some of the laws are scarcely old enough to affect the statistics of causes of blindness of new pupils entering the schools for the blind, there is no useful information available up to date as to the decrease of this affliction.

Facilities for Eye Treatment

In the matter of facilities for eye cases, Canada has, to begin with, only about 300 eye specialists (including those who are also qualified for ear, nose, and throat), fully two-thirds of this number being located in twelve major cities through the country. There are obviously long distances to send a patient to the nearest oculist, and although a municipality is generally supposed to pay for its needy people, in increasingly numerous instances, especially with present conditions, it is unable to do so. When a patient with a bad eye is reported to the Institute from any municipality, the Institute first gets in touch with the local civic authorities or a charitable organization to see if the necessary money can be provided, and to verify the financial state of the family. Sometimes

the nearest board of health will assume the obligation, but if no one is found, the nearest branch of the Institute takes care of him. When a letter comes in from a rural district or distant point, the Institute is able to make investigations frequently through the local public health nurse, Red Cross, Victorian Order of Nurses, women's institutes, provincial police, or wherever it has co-operative arrangements. If no financial assistance is forthcoming, the Institute arranges for the client to be brought to a center, and takes advantage of any free privileges which are offered. Sometimes the Provincial Department of Health supplies railway transportation. Free clinics and hospital beds at low rates can be counted upon in the larger cities. Where there is no clinic, sometimes the oculist gives his services free. Glasses can generally be secured for a moderate sum through specified companies with whom the Institute deals. In many cities a school child is cared for by the school board, which receives a special grant from the local board of health, and makes its own arrangements for treatment and glasses, often supplying the latter if parents cannot pay. Certain organizations definitely include assistance of this kind in their programs. Much service has been rendered through the Junior Red Cross, Lions' and Gyro clubs, special chapters of the Imperial Order of the Daughters of the Empire, women's institutes, and the many women's auxiliaries to the Canadian National Institute for the Blind. Among the problems encountered by the Institute are the father who is unwilling to bother with Mary's eyes, for "her mother was just like that at her age, and has got along all right"; and with Mary herself, who decides that glasses do not enhance her facial allurement, and therefore refuses to consider their expediency. Again, there is the rollicking Charlie who breaks his glasses frequently. The discouraged mother brings him to the Institute, which wonders whether additional expense is justified. Certain teachers are considering allowing a child to leave his glasses at school at the end of the day, there being little or no homework in most of the lower grades, feeling that the good glasses do when used regularly during school hours offsets any harm which might follow their abandonment the rest of the day. Because of the nature of these indispensable "prosthetic appliances," efforts to aid or preserve the eyesight are too often unavailing.

Eyesight of Canadian School Children

The Institute has tried to gather what statistics it can find, through the aid of local and provincial departments of health, on the percentage of children with defective vision. This seems to vary all the way from 8 per cent to 20 per cent, usually nearer the 8 per cent mark. These figures generally refer to children singled out by teachers as showing signs of eyestrain in the classroom and examined with the vision test chart by the school nurse or doctor. Of course, if an oculist could examine all the children there would probably be a marked increase in this number. In one fairly representative city, the elementary school children show 11 per cent with defective vision, and high schools, 15 per cent. The normal schools questioned go as high as 33⅓ per cent. One nurse asked the entrance class how many wore glasses or had ever worn them, and fully half held up their hands. In towns where there is no regular school survey, the Institute approaches Lions' or Gyro clubs stressing the need, and if the club desires to take up the matter, it makes arrangements through the local school board, or, as in Ontario, sends through the local school board a request to the Provincial Department of Education which provides a doctor free for the purpose. The club arranges for glasses or treatment when the family cannot pay, with the exception of those who have below 20/70 vision, in which instance the Institute can be called upon to assist. The Institute hopes in the near future to make arrangements with certain oculists, in one of the provinces at least, whereby all rural cases may be brought at intervals into specified centers, not ordinarily served by oculists, and receive the necessary treatment.

Sight-Saving Classes

In cities where all the children have been tested with the vision test chart by nurse or doctor, for the purposes of entering a sight-saving class, those selected having been re-examined by an oculist, the Institute finds that the ratio of those between 20/70 and 20/200 in the better eye after correction, averages one in every 700. On that basis, therefore, it has calculated that an elementary school population would have to reach somewhere between 8,000 and 10,000 before sufficient children would be forthcoming to prove

to a school board the practicability of establishing a sight-saving class. A city with an elementary enrollment of this size would be itself in the neighborhood of 60,000 people. As pointed out before, there are only 15 cities in Canada approximating this size. Two of these have three times as many French children as English, and in the majority there are two school boards, Roman Catholic and Protestant, each in charge of its own schools. This divides the school population again as far as requisite numbers for sight-saving classes are concerned. There are as yet no sight-saving classes in Canada under a Roman Catholic School Board, although some Roman Catholic children attend Protestant sight-saving classes by special arrangement.

Canada has, however, succeeded in opening fifteen sight-saving classes, located from east to west: in Nova Scotia—Halifax, one; in Quebec—Montreal, one; in Ontario—Toronto, five, Ottawa, one, Hamilton, one, London, one; in Manitoba—Winnipeg, two; in Alberta—Edmonton, one, Calgary, one; and in British Columbia—Vancouver, one. Canada is indebted for the inauguration of her first class to the generosity of the Massachusetts Relief Commission, which alleviated the suffering of the people of Halifax following the explosion of a French munition ship in the harbor in December, 1917. Four of the 15 classes have been established in the last year and a half. Of the five cities not represented, two have only a small English-speaking Protestant school population; the other three have conducted a special survey for the purpose of establishing a sight-saving class but are not as yet able to start one. There is no course in Canada for training sight-saving class teachers, although a short course was held a few years ago. Some of those now teaching took this course; others took advantage of the courses offered in the United States; others observed in the classes in progress here, hoping to take a course at a later date. In some centers the local board of education pays for this training and, where it is unable or unwilling to do so, only the more enthusiastic teachers can find the time and means to do so themselves, as the initial cost of the railway fare is expensive. In special cases the Institute assists teachers in this respect. It is expected, however, that a sight-saving class training course will be held in Ontario next summer, if sufficient apply to make it worth while.

The children themselves have proved very happy in sight-saving classes, and it has not been difficult, on the whole, to persuade parents to agree to this special education. The teachers in the regular grades have been most co-operative as regards admitting extra pupils to their regular lessons for oral work. High school work in sight-saving classes is taught only in Toronto and Winnipeg. Winnipeg is the only city which makes use of buses to convey sight-saving class children, but other auxiliary class children are collected at the same time. Where children go by street car, tickets are sometimes provided through the local board of health. In Montreal, where the distances are great, and the Protestant schools number only one-fifth of the Roman Catholic schools, most of which are French, and are scattered from end to end, the question of transportation diagonally across the city from homes far apart is baffling. The expense and time involved in transportation alone hinder the formation of additional classes everywhere. Where a Provincial Department of Education has not extended its grant to include sight-saving classes, the local board also hesitates to take the responsibility. The Canadian National Institute for the Blind seeks to promote these classes by interesting health and educational authorities in their advantages and necessity, assisting where necessary with the survey, or facilitating the establishment by enlisting the co-operation of oculists and influential citizens, and by publicity through local organizations. It has to recognize, of course, that in all prevention work the education of the general public is a necessary corollary and, in fact, very often a necessary forerunner of a definite provision by educational and health authorities. It also supplies literature on the organization and administration of the classes, lists and cost of equipment, etc.

Canadian Large Type Books

Most of the equipment for sight-saving classes may be purchased in Canada, with the exception of large type books. These are bought from the United States—a few, in slightly smaller type, from England. A movement is now on foot for these books to be published in Canada, which will reduce the cost and provide material from Canadian texts. A list of the variety of books required

and the estimated number of children in each province who would stand in need of books of this kind were submitted by the Institute to each Provincial Department of Education, with the estimated cost of the books to the province. The Institute is eager for these books to be published in sufficient quantity that they may be available to all children with badly defective vision—not just to those in the vicinity of a sight-saving class. At present, school books used in Canada vary with each province, but most of the deputy ministers of education expressed themselves as being willing to authorize the use of any books drawn up for this purpose, published in large type. A committee has been appointed by the deputy ministers to consider this matter when the new Western reader is published, which is expected to be the most universally used edition in Canada.

Conservation of Vision Literature and Public Information

The Institute has had opportunity, within the last two years, to assemble and publish a series of prevention pamphlets in answer to typical questions received from all over Canada. These pamphlets deal with general care of the eyes; signs suggesting eyestrain; good lighting; sight-saving classes; play accidents, etc. Since the first issue in May, 1930, about 175,000 pamphlets, 6,000 posters, and 3,000 vision test charts have been printed. This material has been carefully distributed through the much appreciated assistance of provincial and local departments of health, normal schools, Home and School clubs, Council on Child Welfare, etc. Two slide films of approximately 80 pictures each, and two shorter films of 35 pictures, have been prepared to illustrate various aspects of eye care. The poster is in the form of a rhyme sheet, and the eye chart combines letters, numbers and pictures to meet the requirements of foreigners and young children, although an ordinary school child can use all of each line. The literature is distributed free. Periodic visits are made to the publicity departments of the Provincial Departments of Health and other interested organizations for consultation as to the most effective means of public education in connection with eyes, and what type of material could be used by them if prepared by the Institute.

By permission of almost all the deputy ministers of education,

the Institute has had the privilege of visiting normal schools, summer schools and university departments of education, for the purpose of giving an illustrated lecture on care of the eyes, and placing at the students' disposal the pamphlets, posters, and eye chart. There are twenty-three English normal schools and at least sixteen French schools in Canada. This privilege has been much appreciated by the Institute, as the normal school program is generally so full that outside lecturers are not encouraged. The nurses who are on the staff of certain of the schools are most co-operative in the furtherance of this work. As a large number of rural school houses are without medical inspection, and some only infrequently visited, and as a nurse often leaves the selection of children with defective vision to the teacher, the Institute hopes, through contact with the teaching profession, to impress upon teachers the importance of early discovery of a child whose eyes may need attention. Arrangements have been made during the past year for copies of the film, which has been compiled to correspond to the normal school health program, to be made available through the branches of the Institute, to normal school nurses who will use it themselves in their work. Similar copies are also available for some of the Provincial Departments of Health for country fairs, etc. The films are also used in the many illustrated lectures given by the Institute to interested organizations.

Causes of Blindness

With regard to special prevention of blindness activities in Canada, trachoma, which has been affecting small portions of the Indian and foreign population, mostly in the western provinces, is being handled very stringently by the Provincial Departments of Health. Immigration officials have been strictly watching for trachoma but these cases have been resident in Canada for some years. Oculists or nurses are sent out to make a preliminary survey; suspected cases are treated at regular clinics, and isolated, as far as possible. As one deputy minister remarked, "Owing to the severity of the treatment, the people themselves usually fail or neglect to carry it out regularly." There seem to be some hundreds of affected people, although the Institute has only 81 registered as blind from this cause. To control this disease among the Indians,

the Department of Indian Affairs has recently appointed an oculist who has made a special study of trachoma in Europe, to assist in organizing systematic and thorough treatment in the areas in which trachoma most frequently occurs. His work will be concentrated on the children, as it is exceedingly difficult to stamp out this disease among the adults because of their *laissez-faire* attitude and their lack of concern for hygiene on the Reserve.

The Industrial Accident Prevention Association is carrying on a forceful publicity through all industrial concerns, and accidents are decreasing yearly, but the Institute has been unable to obtain any figures definitely relating to eyes, as publicity of this kind is not approved by their organization.

The Social Hygiene Council is untiringly campaigning against venereal disease and its dire consequences both mental and physical. One-quarter, at least, of the cases of blindness registered with the Institute would seem to be attributable to this cause, directly or indirectly; but accurate information on this point is impossible because that cause of blindness is rarely stated as such.

From the Institute's records, the chief cause of blindness, aside from venereal disease, is cataract, which accounts for nearly another quarter; then accident from all causes, including industrial and play accidents, amounting to about one-sixth. Glaucoma and myopia come next at about one-twentieth, after which the causes are variously divided. In the three English schools for the blind receiving grants from the Provincial Governments the causes of blindness of incoming pupils vary considerably from year to year. The three main causes may be said to be venereal disease in some form; injury; and cataract. Considering the age of the new pupils, one of the reports makes rather an encouraging statement that of the twenty-three pupils entering that year, no case can be definitely traced to ophthalmia neonatorum, although there might be a suspicion in four instances.

Summary

Although the Institute since its inception has always sponsored prevention of blindness work, it is only during the last few years that it has been able to concentrate on the educational and propaganda side of the work apart from the practical preventive surveys

and treatment. The responsibility for prevention work is divided among the national office and the five divisional offices across the country. The national office assumes the responsibility for the publication of all the pamphlets, posters, vision test charts, etc., which are supplied to the divisions for distribution and, in addition, carries out a comprehensive program of direct contact and campaign through agencies. The divisional offices develop the contacts made by the national office and improve conditions locally for effective distribution of publicity material, supplementary educational propaganda, and take care of the practical work of surveys, provision of glasses, treatment, etc., in their respective territories. In each division there is at least one capable representative responsible for the conduct of prevention work, combined, as it has to be, with executive or social service duties. The program is arranged mainly with the children in mind, since both the direct and indirect results are more effective. The direct benefits consist of the visible correction of eye defects at school; the indirect, of the interest taken by the parents in the child's welfare, their own eye condition, and that of others in the community. The Institute hopes in time to provide for all cases of defective vision, where the family cannot pay, until the departments of health become all embracing, so that an individual may know definitely where to appeal, instead of trying one agency after another, to his discouragement and abandonment of effort. It looks forward also to the time when there may be a dominion-wide systematic and routine examination and care of children's eyes, so that they will be safely and adequately equipped for their work. We must, however, perhaps appropriately, talk of this as "the vision of the future."

Social Hygiene and the Prevention of Blindness

William F. Snow, M.D.

THE author discusses a subject which is common ground for the American Social Hygiene Association and the National Society for the Prevention of Blindness

ARTICLES such as this ought to start out by warning the reader that there is nothing new in them. Their value lies in repetition of facts and formulæ which need to be applied on an ever-increasing scale if we are to make constant progress in the prevention of blindness. Scientists have given us knowledge and physicians have shown us how to use it for conservation of sight; but both are helpless in extending the application of protective and preventive measures unless their efforts are supported by activities of such agencies as the National Society for the Prevention of Blindness which succeed in enlisting the interest of the public and arousing people to action. For this purpose a multiplicity of articles broadcasting the same facts in varied phrasing is justifiable and indeed necessary.

What are "Social Hygiene" and "Prevention of Blindness"?

Of the two terms composing the title—"social hygiene," and "prevention of blindness"—probably the latter is the better understood. Yet the frequency with which the national organization is spoken of as the "Blindness Society" and described as dealing primarily with care for the blind, illustrates how much emphasis needs to be placed on popular understanding of the real meaning of prevention. As for social hygiene, it is not surprising that such an artificial term should require special explanation.* For the

* In the United States, social hygiene societies usually describe their objectives as follows: (1) To preserve and strengthen the family as the basic social unit; (2) To

present purpose the medical and public health aspects of social hygiene are pertinent, particularly as they relate to diseases caused by the syphilis organism and by the gonococcus. While the field of the American Social Hygiene Association is entirely distinct from and in many ways not at all related to that of the National Society for the Prevention of Blindness, these two agencies have a common ground in promoting early diagnosis, adequate treatment, and effective after-care of eyes invaded by these dangerous infections. Even more important is the team-work of these associations and their affiliates in informing and aiding the public to prevent the spread of these diseases.

Ophthalmia Neonatorum

One of the most important and tragic of the diseases which these national agencies are jointly combating is scientifically known as ophthalmia neonatorum. This disease is an inflammation of the lining of the lids and other parts of a baby's eye, caused, in two-thirds or more of the cases, by the gonococcus. When the mother has gonorrhea this organism has, of course, a special opportunity to infect the eyes of her baby during birth. These facts explain why blindness at birth occurred in past centuries so frequently and was accepted as an inevitable birth infection until a generation ago. In 1884 the gonococcus was discovered by a scientist named Neisser and later identified as the cause of gonorrheal ophthalmia in newborn children. Then a famous physician named Credé found that a solution of silver nitrate, from one to two per cent, dropped cautiously into a baby's eyes, would not hurt the eyes but would kill the gonococcus and thus prevent the infection. This simple procedure has since been perfected, the preparation and distribution of approved solutions standardized, and laws and administrative measures worked out for requiring babies' eyes to be treated in this manner. Most of the states have now adopted such measures, and public opinion has approved the principle of disinfecting

promote educative measures concerning the relations of the racial instinct to the conditions of civilized society; (3) To emphasize the responsibility of the community and the individual for preserving or improving the quality of future generations by educative and social measures; (4) To further social customs which promote a high and equal standard of sex conduct in men and women; (5) To promote the prevention and treatment of venereal disease by appropriate educative, medical and social measures; (6) To repress commercialized vice; and (7) To co-operate with the various organizations interested in the above subjects with a view to co-ordinating efforts to secure these ends.

every baby's eyes in order to be certain that no eyes fail to receive this protection. At the same time, physicians and nurses wisely emphasize the fact that only a small proportion of all the babies born are likely to have "sore eyes," and that of these cases probably a third will be caused by other infections. When the facts are understood, parents very readily accept this precautionary legal requirement in the interest of public health. In twenty-four years, blindness due to this disease among the new admissions to United States schools for the blind has decreased 73.4 per cent; it now represents less than 7.5 per cent of the total admissions. Such data are indicative of the great advances made by official and voluntary forces in reducing the prevalence of this disease.

It must not be forgotten, however, that if this preventive treatment is not given or is not properly administered and fails, the ensuing infection is not necessarily limited to damaging the eyes. The baby is a sick baby and must be observed for possible extension of the disease and exposure of others. Also the mother should be viewed as a sick mother. Very often both the baby and the mother ought to be taken to a hospital; and always the nursing is a vitally important part of the treatment. The essential point for the layman to understand is that early and continuous treatment is likely to save the eyes, or at least to prevent the most serious and disfiguring results.

One of the encouraging developments of the past few years has been the incorporation of lectures on gonorrhea in post-graduate study and clinic work for physicians, and training courses for medical social service in eye clinics. The promotion of such opportunities for experience in the proper diagnosis, treatment and aftercare of this disease, combined with special institutes for nurses and activities in popular education, is rapidly laying the foundation for much more effective work in combating disease than has been hitherto possible. When one recalls that probably two to three per cent of all blindness from birth is due to the gonococcus, and that another one per cent may be due to this form of infection of the eyes later in life, it is evident that the work is worth while. The latest Federal Census recorded 63,489 blind in the United States; but this figure gives no adequate idea of the extent of impaired vision due to this one cause, nor of the costs in money and

suffering during the active illness and in the long years of handicap that follow.

Eye Involvement in Syphilis

The other disease in the so-called venereal disease group which causes much blindness or impairment of vision is syphilis. The form of eye involvement most frequently encountered is known as interstitial keratitis. It is a deep inflammation of the cornea, beginning with clouding of this transparent front part of the eye structure. The dullness increases, minute blood-vessels become visible, tears are profuse, light is disturbing, and the increasing salmon-red appearance is a final warning that the child should be taken to a physician without further delay.

From a medical point of view, syphilis of the eye is the reverse of gonorrhea of the eye. That is to say, in the latter the physician is dealing with an acute infection which he tries to prevent from spreading from the eye to any other part of the body; while in syphilis of the eye, the physician recognizes an attack upon this organ by a virulent disease already diffusely established in the body. This fact, coupled with the knowledge that the ophthalmologist's diagnosis of interstitial keratitis is often the first recognized evidence of syphilis, makes it most important that correct diagnoses of such eye conditions shall be determined. The source of infection in these cases is usually the mother; or rather infection of the child occurs during pregnancy. The child is born with good eyes and no symptoms in other parts of the body may be apparent. Usually after the fourth year, and generally before twenty, the conditions described manifest themselves. Then begins the battle to save the eyes from serious permanent damage. But the efforts of the ophthalmologist should be only a part of the whole medical struggle to rout syphilis from its intrenched position in the body of the child. Furthermore, the child should be the starting point of trained social service follow-up work to discover possible syphilitic infections in the father and mother and other children of the family.

Necessity for Prenatal Care of Mother

Syphilis is so insidious in its attacks, so often lies dormant in the body many years, masquerades under so many symptoms of other

comparatively unimportant diseases, and seems to yield to such simple treatment only to reappear in savage attacks upon vital organs of the body, causing ruin and death, that many world authorities in medicine have called it the greatest killing and incapacitating communicable disease. Certainly it is often one of the most baffling diseases for the physician to diagnose, and requires long months of treatment and years of periodic observation to ensure control of its disease processes. The great ray of hope which shines through this tragic picture is based on the scientific discoveries which have been made or perfected in the past twenty-five years, leading to simple blood tests and other means of detecting early evidence of infection with syphilis even though there may be no clinical symptoms readily apparent. Building on these facts, physicians and health authorities have advocated blood examinations of every pregnant woman just as soon as possible after conception. Prompt treatment of the expectant mother for syphilis begun in the early months of pregnancy is important not only for her own sake and future happiness, but because the freedom of her baby from the disease can be assured almost without any reservation. On the other hand, failure to discover and treat this disease is responsible for a very large proportion of miscarriages and early deaths of infants and children before any of the eye conditions appear.

Co-operation of Ophthalmologist with General Practitioner

Thus it is clear that the ophthalmologist, the general physician, the trained nurse, the medical-social worker, the observant father and mother, and all the public health and school department personnel dealing with health examinations and care of children are challenged to unite in a great allied army of workers, on the lookout for evidences of syphilis, and insistent upon public understanding and support of the movement for eradication of syphilis. An added ray of hope for those particularly interested in sight conservation and the prevention of blindness is found in the probability that even after efforts have failed to prevent infection, early detection of eye symptoms of syphilis will generally enable the eye physician to ward off severe permanent impairment of one or both eyes, even though his efforts alone cannot save the patient from

further progress of the disease in other parts of the body in later years. From the practical point of view of economic family and community life this is most important.

Other Eye Involvements of Syphilis

Interstitial keratitis has been selected for reference from among a long list of disturbances or pathological changes in the eye mechanism, because the cornea is of outstanding importance to vision and its impairment can be controlled with such very great benefit to the infected individuals and to society. A mere list of the scientific names doctors give some of the other structures showing ocular manifestations of syphilis is impressive: the iris, ciliary body, choroid, retina, optic nerve, motor nerves. Of course, most of us happily live our lives in ignorance of any such inventory of the structure of a single organ, which we never miss until it is gone or seriously threatened. It is well that we should know the general structures and functions of the body, however, and be informed upon the things to do when any part of the body may be or has been exposed to possible danger and damage. Perhaps the most useful function of voluntary agencies for prevention of blindness and for social hygiene lies in the direction of co-operating with other agencies in calling our attention tactfully but persistently to the matter and method of educating ourselves on this point. So far as syphilis is concerned, the probability that fifteen per cent of all blindness in the United States is caused by it and that a much larger percentage of people are struggling through life with impaired vision because of it, provides ample grounds for making common war on this disease.

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Those who have read to this point, and who have the patience and interest to continue, may contribute greatly both to the movement against blindness and to related activities in the field of social hygiene by commenting upon and interesting themselves in local and national efforts indicated in the remaining sections of this article.

Co-operative Medical Social Work

The limitations of space preclude discussion of many important activities and interesting details relating to joint activities and

co-operative projects of the national organizations mentioned. For example, the joint sessions of these agencies on the "Relation of Venereal Diseases to Vision Impairment" and "Venereal Disease Control"* have exerted a wide influence upon public understanding. The inclusion of leaflets on ocular syphilis and on gonorrhea in the "Information for the Patient" series, prepared for trial use in eye clinics having medical social workers, is another illustration of such co-operation. Similarly the lecture service of the social hygiene societies for parent-teacher associations includes instruction on the value of the prophylactic measures described for prevention of ophthalmia neonatorum; and their work with prenatal clinics encourages extension of the Wassermann blood test and other tests for the discovery of syphilis in expectant mothers. The personnel engaged in preschool vision testing—so important in detecting low visual acuity and other indications of eye handicaps—are likewise potentially a fruitful source of information and contact for the ophthalmologist who discovers evidence of gonorrhea or syphilis in a child referred to him and who desires to follow the disease back into the familial group. As the training of medical social workers for this work and eye clinic follow-up service grow and include a full understanding of these dangerous infections, this form of attack on eye hazards will become increasingly important. The well-organized publicity and pamphlet services of national agencies whose activities bear directly or indirectly upon sight conservation, supplemented by the promotional programs of state and local bodies, have been of inestimable benefit. Those of us who began the practice of ophthalmology a quarter of a century ago have seen great changes for the better both in caring for the blind and in protecting the sighted. Many of the pioneers among the professional and lay groups responsible for this progress are optimistic enough to believe that the movement for the prevention of blindness is just on the threshold of much greater achievements in the coming decade, not only in the United States but throughout the world.

If the most promising advances are to be realized, an important part must be played by social hygiene agencies in marshalling the

* One such group of papers by outstanding specialists was published as Volume IV of the American Health Congress Series, 1926, and is still widely used for reference purposes in libraries.

combined forces of society for unremitting warfare on the so-called venereal diseases. Aside from their inroads on the eyes of children, perhaps the most pitiful cases are the young girls, often mere babies, who develop gonorrheal vaginitis. Here we find this micro-organism attacking the female sex organs, just as it attacks the delicate lining of the eyelids. Once it has invaded the body in this manner, it may cause very serious and widespread damage, and in any event becomes a difficult infection to dislodge and to prove cured. This is one of the infections which hospital medical and nursing services are always on guard against, because once the infection gets started in a children's or babies' ward, it seems to spread like a prairie fire. The rarity of such outbreaks in modern hospitals bears testimony to the admirable perfection of technique in disinfection of hands, uniforms, towels, nursing utensils and other sources of possible transmission of the infection from one child to another. Unhappily, the requisite scientific knowledge for diagnosing and promptly isolating an infected child in a family is not possessed by fathers and mothers. There remains much to be done by health departments and the medical profession in controlling this baffling disease outside the hospitals. All agencies interested in child health and protection need to follow this preventive medicine battle into the home and assist wherever possible. Its potential menace to many eyes in the family and the community is evident.

Social Hygiene and Eyes in Industry

A study of syphilis and gonococcus infections in adult life readily discloses why social hygiene agencies and health authorities are so much concerned with these infections among industrial workers, aside from eye infections. To understand one reason, we need only to picture ourselves as riding behind an engineer who may run by a railroad signal because his brain is beginning to function erratically on account of syphilis; or to imagine being in a crew of men handling a crucible of molten metal by which we may be burned when some one fails in the vital sequence of teamwork because he flinches from the pain of gonorrheal inflammation. For another reason we may look over the expense ledgers of industry and read the costly figures of labor-turnover, compulsory insurance and early retirement pensions due to these diseases. Again we will find that

as a practical measure of administration the examination of applicants for employment, subsequent periodic health examinations, and other health supervision measures, constitute comparatively efficient methods of early detection of cases, which may be brought under treatment to the great gain of the infected individuals and of society.

The results of prophylaxis in combating gonorrheal infection of babies' eyes has been such a brilliant public health measure, and the combination of blood tests and prompt treatment for syphilis of expectant mothers has produced such remarkable results, that repeated attempts have been made to apply prophylactic measures to adults who have been exposed. But the exacting demands of science for thorough disinfection within a very few hours after exposure, and the great difficulties of dealing with these invading microorganisms in the complicated structures of the genital organs of either sex, have thus far proved insuperable barriers to the widespread use in civil life of theoretically scientific and inexpensive preventive measures. Added to these difficulties is the fear, very properly entertained by the health officer, that superficial prophylactic measures employed by adults will lead to a false sense of security and failure to seek medical treatment when mild infections appear. As a practical matter, therefore, prophylaxis for adults has thus far been limited to those few who can be fully instructed and provided with proper facilities by private physicians or in clinics. Health officials wisely will take no responsibility for encouraging self-diagnosis or self-treatment at any stage of such deadly diseases, from the first moment of exposure to the last day of possible danger of spreading the infections to others. For these reasons the Health Department's advice usually is, "If you think you have been exposed, immediately consult your doctor or go to your Health Department for advice."

Some Actual Cases

One is tempted to cite case histories in such articles as this, because they bring out dramatically the points under discussion. An illustration is the story back of a tragic picture of a young father, knowing that his sight cannot be saved, sitting up in a bed in a hospital ward, telling stories to his little son lying in an adjoining

bed with infected eyes for which the ophthalmologist is still fighting; the bewildered wife and frightened little daughter sitting near by, softly crying. The story is common enough. This young western miner went down to the "big city to see the sights," he got drunk, visited the vice district, lost his money, went home to his wife and children penitent, and resolved not to be foolish in the future. He did not know that gonorrhea is a dangerous disease, and when discharges from his infection appeared, he believed what he had so often heard, "that it was no worse than a bad cold." His family lived in a little one-room mountain shack. He and the little boy went outside to wash, his wife and daughter washed and dressed inside. The common towel and wash-basin by the stream, the man's use of these in attempted self-treatment of his infection, his washing and dressing of the little boy—all combined to bring about a gonorrheal infection in the eyes of both father and son. Inflammation of a miner's eye is no novelty and the precious days slipped by when early diagnosis and prompt treatment might have availed. Again the man, taking his family, went to the city to a clinic where the ophthalmologist saw the two patients. It was too late to save the father's eyes, but after long weeks one fairly good eye and one fairly bad one remained to the boy. From the scientific point of view the case was clear; and the accident of separate sleeping, dressing and bathing facilities for the wife and daughter presumably accounted for their protection from infection. But the ophthalmologist felt the needless tragedy of it, and his own helplessness. What should he answer when this young woman asked, "How could God permit this terrible thing to happen to my husband and child?" What could society say in reply to the charge that this husband had never been instructed or trained in self-control; or given any protection from the exploiters of commercialized prostitution and intoxicating beverages?

The following is an extract from a recent letter written in response to an appeal to the National Society for advice regarding a syphilis case: "We shall be very glad to co-operate in getting the right sort of influence brought to bear upon the family you write about. . . . I gather from your letter that the little girl is the daughter of the first wife, but in any event the logical procedure would seem to be to include in the blood studies the wife

and husband, and to see that they also have appropriate treatment.* I take it that this child suffers from inherited syphilis, and the problem would be only half solved if the father or mother were untreated and the disease should later attack the central nervous system, perhaps causing locomotor ataxia, insanity, or blindness. In handling these problems we do not look upon them as involving morals, as was perhaps the case some years ago, nor are we concerned so much with how the blood stream of the family became contaminated as we are with having the virus eradicated."

The doctor who drafted this non-technical letter as the first of a series which brought assistance to a puzzled social worker who was trying to do what she could, felt much as did the ophthalmologist in the first case, that sex education, character training, public information, and community action along all the lines of social hygiene endeavor which these cases suggest might have prevented these tragedies.

Necessity for Public to Know Eye Hazards from Venereal Diseases

The banding together of agencies promoting such work is slowly but surely reducing these human sacrifices which go on behind our venereal disease prevalence statistics. Perhaps a word regarding this question of prevalence is permissible. A conservative estimate of syphilis cases under treatment in the United States is 4.26 per 1,000 inhabitants.† This means that more than half a million people are known to be constantly under medical care for this infection; but this is only a portion of all the cases. The unrecognized infections may be even more dangerous, because there is no chance to do anything for them or for the protection of the public. When it is considered that gonorrhea is probably three to five times as prevalent as syphilis, and that the greatest number of cases of

* The girl's physician had made a clinical diagnosis of syphilis and the laboratory blood examination had confirmed this. Attention had first been drawn to this child by discovery of low visual acuity when she was examined because she was "backward in her studies."

† One of the most valuable publications on syphilis is the Feb., 1932, number of the *American Journal of Public Health:* "Syphilis from the Epidemiologist's Point of View," by Thomas Parran, Jr. "The Control of Syphilis from the Health Officer's Viewpoint," by N. A. Nelson, M.D. "Practicability of Epidemiological Methods in the Control of Syphilis," by William L. Munson, M.D. "Syphilis in a Rural Negro Population in Tennessee," by James A. Crabtree, M.D., and E. L. Bishop, M.D.

both diseases are first contracted about 21 years of age and the great majority within the range of years from 15 to 30, it must be evident that here is a group of the most dangerous and powerful disease enemies with which mankind has to deal. Gonorrhea strikes particularly at the reproductive systems of both men and women in young adult life, and for this reason is often called the "great sterilizer" of the human race. Syphilis, on the other hand, seldom prevents conception but kills the child before birth or savagely maims him physically or mentally. At the other end of the span of life syphilis also insidiously exacts its toll of lives, thus becoming called, as has been mentioned, the "greatest killer."

When the public fully understands these facts and can face them without fear or cruel ostracism and lack of sympathy for the victims of these diseases, the orderly processes of public health and social work will supplement the services of medicine and nursing, to the end that discovery of cases will be made promptly after infection, treatment will be applied, effective after-care and observation will follow. The eye, no less than the brain and the rest of the body structures, will be aided to overcome these infections before irreparable damage has been done. And even more important—the social, religious, and educational leadership of the community will combine to set up effective protective measures for youth and encourage standards of personal conduct calculated to reduce exposure to these diseases and to related moral hazards.

The question frequently arises, "Isn't the cost of all this work prohibitive?" When we consider that the records of venereal diseases indicate 10 out of each 1,000 males and 4.86 of each 1,000 females are infected—a combined rate of 7.46 per 1,000 of the population; when we consider that the young men examined for the draft during the World War showed 55.2 per 1,000 (10.5 syphilis, 44.7 gonorrhea); and when we estimate conservatively that at least $15,000,000 per year are spent on clinic and private care of these diseases, and $11,270,000 annually provided for 12,300 insane patients whom the public would not have to support if they had not contracted syphilis—when we consider all these, and add estimates of wage losses, we must agree that we cannot afford to permit the continued ravages of such costly and deadly disease enemies.

Hope for Eradication

One has only to look back across the years of the first quarter of this century to be impressed with the progress made against syphilis and gonococcus infections. It is probable that the protection of the eye from the ravages of these diseases will rank first in the advances of the next decade. The freeing of prenatal life from them will rank as a close second in the list of achievement. The joining of medical and social forces in a successful drive against these diseases in family life is destined to rank high. Industrial measures may be expected to follow the encouraging examples of the Army and Navy Medical Corps in dealing effectively with these problems. By such processes of attrition it might be forecast that the accessible and susceptible victims of the "Great Imitator" or "Killer"—syphilis, and the "Great Sterilizer"—gonorrhea, may be reduced gradually to those migratory, promiscuous, careless individuals who have no homes, are not employed, and do not produce children. There is much to support the view that these diseases, like some others, may be reduced to a point in prevalence below which they cannot maintain themselves in the community and accordingly begin to die out. It is justifiable perhaps to encourage ourselves to believe that this result may come about. Finally, it may be remembered as a cheerful note in considering this bondage to sickness and death, that if these diseases could have conquered the human race, our ignorance, silence, and neglect would have permitted our extinction long ago.

Artificial Lighting for the Schoolroom

Thomas A. Pilkey

PROPER illumination is an important aspect of the prevention of blindness. Lighting the home was discussed in a recent issue; here we consider the lighting problems of a school building; and in a future issue the lighting of industrial plants will be taken up

SCHOOLS in the past have been regarded as daylight plants and much thought has been given to the size and location of the windows in an effort to provide adequate natural lighting for the classrooms. But within a comparatively few years there has been a change from a simple program of instruction, in which all classes were taught by day, to a complex educational system that includes not only primary instruction by day, but also extension classes and community meetings by night. In addition, unfortunately, many city schools are surrounded by high buildings, and natural light is frequently inadequate in the classrooms during the day. Moreover, even where the school building is surrounded by unobstructed sky, there are those inevitable cloudy or stormy days which, in some localities, comprise such a large percentage of the school year. As a result, artificial lighting has become an essential part of the modern school building.

Artificial lighting is not a matter of hanging bare incandescent lamps haphazardly about the room. There are a number of requirements which must be met to assure good artificial illumination. These are adequate light, elimination of glare, good distribution of light, sufficient wiring capacity, and a system of maintenance.

Illumination in classrooms and other workrooms should not fall below certain minimum values, which are expressed in foot-candles. The foot-candle is a definite and measurable unit. It can

be defined as the illumination on a surface which is one foot from a one candlepower source and normal to its beam of light. This value is measured with a foot-candle meter, or other portable photometer. The following table gives the range of illumination values that are desirable for the various rooms in the school:

Classrooms and study halls, on desks and blackboards	12– 6	foot-candles
Drafting rooms, on tables	15–10	" "
Laboratories, on the work	12– 8	" "
Cloak rooms	3– 1	" "
Corridors	4– 2	" "
Auditoriums and assembly rooms, not used for classes or study	4– 2	" "

From the standpoint of the conservation of vision and general efficiency, it is advisable to use the higher values recommended, although satisfactory results will be obtained from the minimum values mentioned.

It is necessary to get the proper level of illumination without any glare. Brightness or glare is often mistaken for excessive illumination. The latter is hardly possible when we stop to consider that our eyes function under natural lighting levels as high as 10,000 foot-candles. Glare is objectionable because it causes discomfort and eye fatigue—it interferes with clear vision and increases the likelihood of accidents. It may actually injure the students' sight as a result of long exposure. Glare is any brightness within the field of view of such a character as to cause annoyance, discomfort, interference with vision, or eye fatigue. The light source may be too bright—that is, it may give off too high a candlepower per square inch of area, or it may direct too much light toward the eye. A given light source may lie too near the center of the field of vision for comfort. The contrast may be too great between the light source and its darker surroundings. If a light source of given strength remains within the field of vision for too long a time, the eye may be fatigued. The light sources should be carefully shielded by means of diffusing globes or reflectors, which either effectively enlarge the light sources or conceal them from view.

Reflected glare is often as bad as direct glare. Glossy finishes,

glazed paper, shiny desk-tops and glass surfaces reflect bright images of windows and artificial light sources. This is particularly annoying as the reflection is generally from below the eye, from which discomfort the eye has no natural protection. To avoid this, the walls, desk-tops and other objects should have a dull or matt finish. The use of unglazed paper is also desirable.

Typical large classroom in Millburn, N. J., High School, lighted to a level of 13 foot-candles by means of 200 watt Mazda lamps in simple enclosing globes spaced 9 feet x 11 feet, and mounted 9 feet above the floor. White walls and ceiling, medium brown woodwork.

It is not only necessary to have the proper amount of light with good diffusion and absence of glare, but the light should be distributed as evenly as practicable over the working plane. This is accomplished by proper arrangement of the light outlets, their spacing not to exceed one and one-half times the distance from the unit to the working plane. In the corridors and in the auditorium this spacing may be exceeded, as in these areas an even distribution of light is not so essential. Manufacturers of lighting equipment

usually specify what spacing should be used for a given mounting height of the unit.

The luminaires may be of the direct or indirect type. Bare lamps should never be used, as the modern incandescent lamp is too bright to be used unprotected and the distribution of light from it is not satisfactory for this class of work. The luminaire serves

A well-lighted domestic science room in the Millburn, N. J., High School. An average level of 15 foot-candles is obtained from 200 watt Mazda lamps in enclosing globes mounted 9½ feet above the floor. The spacing is 12 feet x 12 feet. White walls and ceiling are of material aid in attaining this effect.

to reduce the brightness of the light source and distribute the light into useful channels.

With a direct lighting system almost all the light is sent from the luminaire directly to the work or place where the light is used. By indirect lighting is meant that system whereby the light is reflected to the ceiling, which, in turn, reflects it to the work. In some cases very nearly half of the light comes through the lower part of the luminaire and the remainder is thrown on the ceiling.

Such a system is known as a semi-indirect lighting system. Any of these systems is suitable for the schoolroom.

If enclosing globes are used, they should be of sufficient density to conceal the light source and of a size large enough to offer low surface brightness. Assuming the use of thin-blown opal or cased glass, or other glass of similar diffusing properties, the globe should have a maximum width not less than the following:

For 100 watt lamp	12 inches
For 100 to 150 watt lamp	14 "
For 150 to 200 watt lamp	16 "
For 300 to 500 watt lamp	18 "

With any system of lighting the color of the walls and ceiling has a decided influence on the ultimate result. Light-colored surroundings permit the maximum amount of light to be available on the working plane. Dark-colored surroundings do not reflect the light readily and hence the efficiency of the system is reduced. The ceilings should be light in color—preferably white. The tint of the wall surfaces is a matter of personal preference. In north rooms a soft, pale olive with a slight blue cast will give good results, while the same color with a slight yellow cast would be better for south rooms. Light buff, too, is considered a good color and may be used for the walls of east and west rooms which receive sunlight for approximately half of the day. Matt finishes are recommended in order to prevent reflected glare.

Regardless of how good a lighting system is, it will soon become unsatisfactory if the luminaires are allowed to accumulate dust and soot. In order to derive the greatest benefit from the lighting equipment over a long period of time, a regular system of maintenance should be inaugurated. It should consist of keeping the lamps and reflectors clean, maintaining a light-colored interior finish, and filling empty sockets and replacing burned-out and blackened lamps with new ones of the correct size. Some reliable employee should be made responsible for the work of maintenance and keeping a record of it. In this way students will continue to get the illumination to which they are entitled.

Medical Social Service in Saving Sight

Eleanor P. Brown

SOCIAL workers are now recognized as indispensable factors in bringing eye treatments to successful conclusions among patients of hospitals and clinics

IN November, 1930, the late Dr. George S. Derby made a challenging statement at the annual meeting of the National Society for the Prevention of Blindness, of whose Board of Directors he was a member. "In my opinion," said Dr. Derby, "a very great opportunity is now knocking at the door. . . . Medical social service is one of the most potent methods of conserving eyesight. . . . It is to be sincerely hoped that the National Society will feel constrained to direct more of its activities into this field."

At the same time Dr. Derby, professor of ophthalmology at Harvard Medical School and chief surgeon at the Massachusetts Eye and Ear Infirmary, offered the facilities of the Infirmary in providing, through the social service department and under its director, special training for social workers engaged, or about to engage, in eye service.

It was not a new idea to the Society—the part medical social service might play in the prevention of blindness. For many years the value of such service had become increasingly evident to those of us coming into more or less close touch with clinic patients suffering from eye difficulties. In 1929 another member of the Board had encouraged the Society, the Associated Out-patient Clinics and the New York City Welfare Council to develop a plan for providing some instruction for medical social workers through a series of study meetings in which ophthalmologists participated with the workers in considering various forms of eye disease and their medical social implications.

Dr. Derby's suggestion, however, resulted in a definite step. A

special committee* appointed by the Board, with Dr. Derby as consultant, was asked to consider the possibilities of sponsoring a plan for the training and placement of medical social workers to be delegated for service with eye patients in hospitals and clinics. On January 23, 1931, this committee recommended the adoption of a program—in its first year to be considered as an experiment—which called for placement on scholarship at the Massachusetts Eye and Ear Infirmary of a selected number of workers for special training in the social service department. It further provided for the location after training of these workers in strategic spots where they might be able most forcibly to demonstrate the value of their service, particularly in view of this special preparation.

What should constitute the required background of its scholarship students? Here again the Society felt called upon to experiment in the development of standards that later might be more definitely set. For the first course, given during April, May and June, three students of varying qualifications were chosen. Two were students from the New York School of Social Work—one with experience in hospital social work, the other with eighteen months of nurses' training. Both had work with the School to complete before receiving their diplomas; and it was only through the School's interested co-operation that necessary adjustments could be made and these two freed for training in Boston. Our third student was chosen from the staff of a social service department, with several years' experience in hospital social work, the latter part of which had been exclusively with eye cases. She was given leave of absence by her department and is now back on the job. Is she better able to put through a constructive piece of work and so to save sight? That is one of the questions we want answered.

One of the three, because of illness, could not stay through the spring term, and finished her required training as a special student in the second course. On December 1 she started at Wills Eye Hospital in Philadelphia, with the job of organizing and administering a social service department. The third of our pioneer group is temporarily attached to social service in another branch of medi-

* Dr. Ellice M. Alger, Dr. Park Lewis, Dr. Conrad Berens, and a member of the staff of the National Society. Later Miss M. Antoinette Cannon and Miss Edith Baker were added.

cine, pending opportunity in New York City for work in an eye hospital or clinic.

Originally planned to cover a four months' period, the first course had necessarily to be shortened, but the second one, starting on October 5, 1931, was scheduled for sixteen weeks. As part of a national scheme, the Society has borne in mind the advisability of placing workers in scattered localities, and with this in view consideration was given to an application for a trained worker in the eye department of Charity Hospital, New Orleans. The size of this hospital's eye load, its affiliations with Tulane University and with other agencies of the community, marked it as a proper choice for demonstration purposes. A worker for training and for assignment to the New Orleans job was selected from the social service department of Louisville City Hospital who has had, added to her practical experience, graduate work in Tulane School of Social Service.

Washington University Hospital and Allied Clinics in St. Louis also applied for a worker to be placed in the new McMillan Eye Hospital. Here seemed an opportunity to contribute to the value of a growing institution and to place someone where the affiliation with a university might logically lead to the development of another training center. A member of the general social service staff was chosen, who after her period at the Massachusetts Eye and Ear Infirmary would start work at McMillan Hospital. In this instance the background is one of training in social work, and experience with a family agency and in medical social service.

Also entered as a scholarship student at the second course in Boston was a worker from the staff of a hospital in New York City. A graduate nurse, she had had a number of years' experience in carrying the social service of her hospital's eye department; leave of absence was granted so that she might get the special preparation which she felt would add to the value of her work.

So there we are with a bird's-eye view of the personnel, given what may be thought of as post-graduate training. That they will make a very real contribution to prevention of blindness is our belief; it is only because of this belief that we are justified in working on the plan. The Society's special committee mentioned above, strengthened by the addition of two medical social workers, has given careful consideration not only to the selection of students,

but to the choice of their location after training. It has taken into account geographic distribution, medical standing of the particular institution, its influence in the community, the character of its social service program, its teaching opportunity and, above all, the true desire of its medical staff to have this service. Without the doctors' sympathy and willingness to co-operate with the social worker, little could be accomplished through a demonstration, and little chance would be had of building up an efficient service. In more than one instance the Society is having to underwrite a portion of the worker's salary for what is distinctly understood to be a demonstration period, with the agreement that at the end of such period this salary be taken over entirely by the hospital—granted, of course, the service has shown itself to be worth while. During this time, a certain supervisory relationship is maintained by the Society, and it is well recognized that such financial assistance is given not as aid to a particular hospital, but for demonstrating the value of a project which will contribute, as we believe, to the whole national program of sight conservation.

Are we not bound at this point to consider seriously just where we are and what should be our next step? As you can imagine, in coming thus far with the project we have suffered all kinds of growing pains. Is the stage reached where we can settle down into a more comfortable state of following a definite plan, or should we continue on an experimental basis, or what is very much to the point, should we cease aggressive action and be content with having added these workers to a comparatively new field, leaving further developments to come from the medical social workers themselves?

We do not propose here to discuss the contents of the training course nor its many ramifications. Exactly what this special instruction should consist of has been very carefully thought out, but it is still in the developmental stage and must be evaluated in the light of actual service from those who have participated in it. There are definite things, however, on which we want the thinking of all who are in hospital work, not to mention the many others engaged directly or indirectly in preventing blindness.

In closing, I should like to leave the following questions for the consideration of all those interested in medical social eye work.

They have long been in our mind but have occurred with increasing emphasis during the past year. We shall indeed welcome co-operation in helping us to think along the right line.

Should specialized training in the eye field be encouraged? Is it more needed for ophthalmological service than for other departments of the general hospital? Is opportunity for this training welcomed as filling a particular need or only as one step toward the ideal of specialized training? Should the delegation of workers to handle only eye cases be encouraged? On what previous experience and training should their entry into the specialized field be based?

Editor's Note.—In the interest of the subject we are herewith presenting an outline of the training course for medical social eye workers at the Massachusetts Eye and Ear Infirmary October 5, 1931, to January 23, 1932 (four periods of four weeks each); this has been completed since the preparation of the above article.

First Period*

Medical Teaching.—Eight medical lectures given by ophthalmologists on the staff; (2) Recommended reading and study of eye diseases;† and (3) Study in eye clinic through special cases used for demonstration by medical staff.

Social Management in the Eye Clinic.—(1) Observation of clinic activities—personnel and their respective duties; (2) Methods of case selection; (3) Reasons for case selection; (4) History and development of department; and (5) Records.

Case Work Study (Through observation, conference and reading).—(1) Bulk handling in clinics; (2) Selected case work; and (3) Relation with outside agencies.

Community Program.—(1) Study of community set-up—public health, educational, social and legislative aspects; and (2) Visits to local organizations for the blind, local organizations for prevention of blindness and sight-saving classes.

* The time during this first period might be considered as equally divided among medical teaching, clinic management and case work study, with minor emphasis on study of the community program.

† Subject matter of the medical reading and lectures includes: anatomy of the eye; diseases of the ciliary body, uveal tract, sclera, lens, lids and lacrimal apparatus; and refractive errors.

Second Period

Case Work Participation.—(1) Following through case problems; (2) Conferences with workers in social service department; (3) Clinic talks by doctors in Massachusetts General; and (4) Place of the general hospital in eye work.

Special Study Project.—(1) Selection of cataract cases appropriate for statistical study; (2) Follow-up of cases in homes and clinic; (3) Conferences with staff doctors re medical data; and (4) Conferences with social workers re social data.

Clinic Work Participation.—(1) Handling of patients in clinic; (2) Recording; and (3) Detailed work with patients, especially in connection with cataract cases used in study.

Third Period

Case Work.—Continued with cataract patients.

Special Project.—Continued as in second period.

Organization.—Lectures, conferences, discussions and reading.

Fourth Period

Special Project.—(1) Continued as in second and third periods; (2) Assembly and evaluation of material; (3) Statistical formulation of material; and (4) Interpretation of study.

Review of Course.—Conference.

Criticism of Course.—Conference.

Future Program.—Conference.

Problem of Students.—(1) Study of anticipated jobs of individual students; and (2) Conferences based on what the individual needs will be.

Editorials

Seeing 1932 Through

AN ANALYSIS of the past year's activities of the National Society indicates some remarkable advances in saving sight. Ophthalmia neonatorum has reached a new "low," and, contrary to a financial interpretation of the word, low is what we aim to keep it. Sight-saving classes have steadily increased. Preschool vision testing was carried on in more communities. Medical social service in eye clinics is taking root. Industrial eye hygiene and safety measures are more zealously sought. All in all, some noteworthy advances were made.

To predict what the history of 1932 will be, however, is a different matter. The necessity for emergency relief is urgently felt in every community in the United States. Local communities and official agencies already have had to reduce their activities in health work. Present hardships are bound to increase physical and mental handicaps for the future. Likewise, the neglected eyes of today mean added hardships and perhaps added pauperism in the future. Think what a year of neglect to the eyes of children might cost! We should be paying for many years to come in terms of handicaps, of expense, of regret and reproach. In a letter discussing emergency relief, Mr. Walter S. Gifford, director of The President's Organization on Unemployment Relief, said:

"It is obviously important, however, that localities give careful consideration to a well-rounded community program and undertake to carry forward health work, where needs will be increased; child care which will present even greater demands if the welfare of children is to be looked after; and that considerable group of so-called character building agencies for whose services there has probably never been a greater need, if the morale of young people and adults is to be maintained."

The National Society has helped the cause of good sight through many years and will continue to do so. But, in order to work most efficaciously, it requires the co-operation of local communities. It

therefore beseeches everyone to consider the problem of sight conservation and to hold on under the pressure of more obvious and immediate needs. In order to see through the years, everyone—local agencies, health boards, educators, employers, and the National Society—must co-operate in seeing 1932 through.

George Strong Derby *

The passing of George Strong Derby was a sad and serious blow to his family, his friends, his patients, and the countless persons who benefitted more remotely yet none the less definitely by the generous contributions of his time and energy to the various aspects of ophthalmology and the conservation of vision. His career was a consistent and vigorous service in behalf of sight.

It was in this spirit of devotion to the cause of safeguarding vision that he accepted membership on the Board of Directors of the National Society for the Prevention of Blindness. This affiliation was no empty formality on his part. During the nine years in which he participated in the Directorship of the organization he not only followed with keen interest the work carried on by the Society but took a leading part in inaugurating sight-saving activities of a most vital nature. Through his initiative an important demonstration of the value of social service in salvaging eyes afflicted with glaucoma was undertaken by the National Society in co-operation with the Massachusetts Eye and Ear Infirmary. Dr. Derby was also primarily responsible for the introduction of a course for training medical social workers for service in eye hospitals and clinics. This project, jointly carried on by the Massachusetts Eye and Ear Infirmary and the National Society, is destined to have an immeasurable influence on the care and treatment of sick eyes.

The conservation of vision has indeed lost an ardent supporter, and the Directors of the National Society for the Prevention of Blindness, an honored associate.

* Resolution passed by the Board of Directors at the death of Dr. Derby, December 12, 1931.

Note and Comment

September Sight-Saving Review.—So great has been the demand for the September issue of THE SIGHT-SAVING REVIEW that it has been completely exhausted. The National Society will be glad to receive any unused copies of the September number, and to extend the subscription one issue to all those who will return them.

Education of Myopes in England.—A visit of inspection to the Daisy Hill Myope School in Bradford, England, opened discussion among workers and educators of the partially sighted and blind children on the education of myopes. Although as yet there is no cure for myopia or lengthening of the eyeball, special care may prevent the condition from progressing. General building up of the health, and restricted use of the eyes, with frequent re-examination to watch the eye condition, are important factors in arresting the progress of myopia. Educationally, it must be borne in mind that the myope is a sighted child, and must be educated as such. A suggestion was made to change the name, "myope class," to the more positive and constructive "sight-saving class."

Cataract Clinics in India.—At the annual eye clinic of the Seth Heranand Charitable Eye Hospital, a group of American ophthalmologists plan to perform about 100 cataract operations a day. India seems to be a special breeding ground for cataract, due, perhaps, to the intense sunlight and the poor diet among the natives. Other eye diseases will be treated, with one group of physicians operating and the other fitting the patients with glasses.

Eyes in the Air.—The greater complexity of modern life and its reliance upon machines demand an increased emphasis upon sense acuity. The visual requirements for locomotion are now the subject of wide study. According to an editorial comment in a recent issue of the *American Journal of Ophthalmology*, good visual acuity, a full field of vision, and accurate depth perception are fundamental requirements for flying. The physical changes that take place in the air cause a loss in visual acuity and failure of the

extra muscle balance; curiously, the smoking of one cigar affects the vision more than drinking five ounces of cognac; psychological and emotional attitudes have a marked bearing upon the ability to see. It is of interest to learn that although the first regulations for pilots of flying machines were most stringent for both private and public operators, a recent amendment of the rules governing flying requirements permits that pilots of private machines may use correcting lenses to bring their eyesight up to the high requirements of commercial flyers. This gives opportunity to fly to the 5,000 who had formerly been rejected as flyers because of slight visual defects.

Unusual Field for the Prevention of Blindness in Australia.—According to Dr. J. Lockhart Gibson, in an article in the *British Journal of Ophthalmology*, the children of Australia suffer one menace to sight that is not common to children of other lands: almost uniformly, each house in rural Australia is surrounded by a wooden veranda, painted with lead paint. The intense action of the sun soon disintegrates the paint, and children playing on the verandas get the fine paint dust on their hands, and eventually into their mouths. To counteract this danger, a law has been passed making it a penal offense to use lead paints in places within the reach of children. Although some good has resulted, until parents themselves realize the constant menace of blindness or partial optic atrophy, as well as the other hazards of lead poisoning to their children, these cases will persist.

Eyesight for Drivers.—Ability to see ahead is no criterion for the visual requirements of automobile drivers, is the opinion of N. Bishop Harman, in an article in the *British Medical Journal*. Lack of a full field of vision and loss of binocular vision are more often the cause of driving accidents than is dullness of visual acuity. Dr. Harman would substitute for the inadequate visual acuity test now given a test in the ability to play games, such as tennis or soccer, where visual reaction time and general intelligence would furnish guides of a driver's physical and mental fitness. While he urges strict study of the physical and visual equipment of the commercial and public chauffeur, Dr. Harman finds that the private driver, for his own peace of mind, will determine his own driv-

ing limitations, and only those who feel confident of their ability to see will drive.

An interesting note on the relation of vision to motor accidents is seen in the monthly bulletin, *Street Accidents*, published by the Police Department of the City of New York. During the month of November collisions of cars injured 1,379 persons and killed 18; misjudgment of signals caused the injury of 256 people, and the misjudgment of distance, closely connected with binocular vision, caused the death of 2 and the injury of 346 people. Apropos the subject, field of vision and muscle balance are explained in a short article in the February *Popular Mechanics*. A map of the field of vision for the normally sighted person shows that white is most prominent of colors in the field of vision, while red is more visible to the side view than is green. Simple tests are suggested for determining field of vision and muscle balance.

Mexico Compensates Workers.—The new Mexican Federal Labor Code, which went into effect last August, provides a sliding scale of compensation awards. According to this allowance, the complete loss of sight is a 100 per cent disability, and is worth pay for 918 days; eye and vision losses of lesser magnitude drop from this to 15 per cent compensation when there is a loss of 40 per cent of visual acuity in one eye of a worker whose vision is an important asset in his occupation. These arbitrary valuations for damages suffered are to replace the local laws on compensation which were elastic and variable in many places, not always to the advantage of the injured workman.

Prevention of Blindness in India.—The 1930 report of the Blind Relief Association of India again stresses the fact that there are 5,000,000 blind in India, that more than 60 per cent of these need not have been blind, and that many of them might yet be saved could they be found and treated. Medical aid to the rural centers is expensive, and the few doctors and clinics are not fully utilized because of native ignorance and superstition. The Blind Relief Association administers to this rural section through the services of the field workers who travel from village to village inspecting the eyes of newborn babies, preventing eye troubles in cases of small-pox, treating and sending to hospitals cases of glaucoma, trachoma

cataract, etc. Publications in the vernacular, slides, and lectures are included in the campaign to make rural India eye conservation conscious.

Eye Clinic for Seamen.—A contribution to the prevention of blindness and the conservation of sight which has international scope is the recent establishment of the John Markle Eye Clinic in connection with the Seamen's Church Institute in New York City. Seamen of all nationalities with eye difficulties will be treated in this clinic, at whose head are Dr. Conrad Berens and Dr. Giovanni Paccione, at the Institute's headquarters, 25 South Street. The clinic is open Tuesday and Friday mornings.

Tear Gas Burns.—Chloracetophenone, more commonly known as tear gas, because of its pronounced effect upon the lachrymal ducts, seems to have entered the list of dangerous playthings which unnecessarily menace eyesight. Three cases of accidental injury with this gas are reported, two of whom recovered after prompt treatment. From clinical and experimental observation the most efficacious treatment consists of prompt flushing of the eye with a solution of sodium sulphate in water and glycerin.

Increasing Use of Glasses Among English School Children.—According to Dr. Gordon Lilico, an English health officer, a greater number of children are now being examined for vision defects, and a larger percentage of them are having defects corrected. While this shows, to some extent, that parents are taking a more active interest in the eye health of their children, Dr. Lilico finds that some of the increase may be attributed to the greater eye work now prevalent, with longer periods of home study, and to the increasing habit of school children to attend motion pictures.

While English parents are buying more glasses for their children, Dr. Frank Allardice, according to the *Medical Officer* (England), urges parents to see that the children who need glasses wear them regularly and consistently. He says, "One cannot imagine a child who carries a crutch leaving it behind for fear that it might be broken during play."

Learning by Seeing.—That sight is the most important of the senses in learning has been the basis of much of our contemporary

educational methods. Charles H. Selzer, instructor in the department of psychology, State Teachers College, Pennsylvania, has concretely demonstrated this superiority of sight. Experiment showed that pupils learned more quickly and more accurately a list of nonsense syllables by seeing them than by hearing them. "It is no longer enough, however," he says, "that educators recognize the relative advantage of visual perception. . . . To obtain the greatest degree of visual aid we need not only efficient visual receptive organs, but these must be stimulated by objects and situations that are biologically adapted to elicit a response." He discounts the disadvantages of low degrees of myopia, although he finds that astigmatism and hyperopia are visual handicaps for learning. Because he finds that one eye is stronger than the other (one-third are left-eyed, the remaining are right-eyed), he recommends bilateral lighting. Other eye defects are responsible for inability to learn, particularly poor eye muscle balance, which often accounts for the child's failure to read and spell accurately.

Eye Hazard Eliminated.—While authenticated statistics are not available, there is no doubt that the possibility of flying and splintering glass in cases of collision threatens the eyesight of every motorist and injures the sight of many. The recognition of this preventable menace to sight has been the concern of insurance companies, ophthalmologists and workers for the prevention of blindness, as well as of the manufacturers of non-shatterable glass. It was a satisfaction to note that at the recent Automobile Show in New York City nearly all the 1932 cars come equipped throughout, or may be ordered, with non-shatterable glass.

Astigmatism Test.—A clock with striped circles instead of the usual figures is a new test chart for astigmatism. If, when looking at this clock, some of the circles appear blacker than others, astigmatism is present. But this simple test, warning of eye trouble, should not take the place of thorough ophthalmic examination.

Prevention Film Has Practical Results.—After a showing of the National Society's film, "Preventing Blindness and Saving Sight," to a group of 400 Japanese on the west coast, a worker for the blind reports that seven of the audience shortly thereafter

visited oculists, to discover and begin correction of eye defects and disease that demanded immediate attention.

Ophthalmia Prophylaxis in Mexico.—An official high in the ranks of the department of health in Mexico has recently issued a circular urging the substitution of citrate of silver for nitrate of silver as a routine prophylactic in the eyes of the newborn, claiming that silver nitrate is the cause of many cases of blindness.

Dr. A. Torres Estrada, an ophthalmologist of repute in Mexico and a director of the *Anales* of the Mexican Society of Ophthalmology, hastens to refute the statement, pointing out that never in twenty years has there been an authenticated case of blindness developing after timely use of silver nitrate, and that where blindness has developed, it is because the parents did not use a prophylactic until after the ophthalmia had developed a month or more and progressed to a point past cure. He advises obstetricians and midwives to look to the United States, France and Germany, where the use of silver nitrate is mandatory at birth, and claims that in cases where the solution has been even stronger than the usual one per cent, no damage has resulted. He looks forward to the time when silver nitrate will be used in the eyes of all Mexican babies, taking the place of the less effective lemon juice and argyrol now in common use.

Sunlight for Babies.—A revised pamphlet has been issued by the Children's Bureau of the United States Department of Labor giving detailed instructions for year-round sunbaths for infants and children. There is no danger to the baby's eyes, says the Bureau, unless the eyes are turned directly toward the sun. "If he (the baby) lies with his feet pointing away from the sun and his head slightly raised, the shadow of his forehead, eyebrows and eyelids will shield his eyes."

School Eye Clinics in Cleveland.—Under the auspices of the Cleveland Board of Education school eye clinics are located in three parts of the city, and render a valued service to sight conservation. During the past two years 8,050 school children, in grades from kindergarten to the ninth grade, visited the clinics; 1,958 children were tested for visual acuity, of whom 1,713 were

fitted with glasses. The greatest number of corrections were made among children in the third, fourth, fifth, sixth and seventh grades, while strabismus cases were greatest among children in the kindergarten and first grade. In their effort to send the well child to school the eye clinics increase their activity during the month of September, replacing broken glasses, retesting for visual acuity and preparing the eyes of school children for the beginning of the school year.

Eye Protection in Industry.—"The more eye protection is studied in connection with industrial occupations, the larger does the list grow where eye protection is needed," says *Safety Engineering* for December. A list of twenty-nine operations in the car and locomotive department of an eastern railroad, where eye protection is an integral part of routine procedure, includes riveting, welding, grinding, cutting, planing, drilling, chipping and cleaning.

New Prevention of Blindness Head in Missouri.—The Missouri Commission for the Blind announces the resignation of Dr. Meyer Wiener, director of the Department for the Prevention of Blindness. Dr. Wiener, who has served in that office for five years, has devoted the major portion of his time to state-wide activities in the conservation of sight. Succeeding him is Dr. Harvey J. Howard, professor of ophthalmology at Washington University School of Medicine, and director of the McMillan Eye and Ear Hospital and the Oscar Johnson Institute.

Pennsylvania's Ten Year Program.—The state of Pennsylvania has formulated a co-operative program for the welfare of its children through the co-ordination of the activities of the departments concerned with child welfare. Its recently published "Ten Year Program for Children" tells how the program was built and what it will accomplish.

Children with visual handicaps have been made an integral part of the ten year program; study is outlined for investigation of community resources for the education of the blind and partially sighted; estimates are made of medical and social facilities for these children and for the preschool child with visual handicap. Educational programs will stress the need for full social, mental

and vocational guidance for these children, considering the proper school for each type; legislative efforts will—(1) emphasize the need for more classes for the blind and the partially seeing child where they are needed; (2) stimulate the co-operation between the teacher-training centers and this special field of education; and (3) increase the state appropriation for this work.

New Light-Measuring Device.—The illuminating world is interested in the new device introduced by the Weston Electric Company of Newark, N. J., known as the Weston Illuminometer, model 103. The uncomplicated readings, the permanency of its standards, and its immediate response to delicate changes of light recommend it to those who must have accurate means for measuring light.

Vision Defects of Skilled Workers.—In a recent survey analyzing the health of male native-born insurance policy holders it was noted that there was a great difference in the rate of physical impairment among the various occupational groups, for which the highest was among the skilled trade group. A special study of the health records of the workers in the skilled trades has been made by the United States Public Health Service. It is interesting, as well as challenging, to note that the visual defects of this group exceeded those of any other group, particularly in uncorrected visual defects. In certain trades where eye use and probably eye abuse are greatest, it is not surprising to find a high rate of uncorrected and corrected visual impairment; printers, garment workers, cutters, and tailors showed more than 50 per cent eye defect with 30 per cent uncorrected. Other groups with high visual impairment were metal workers, hotel workers, butchers and municipal firemen and policemen.

Trachoma Survey in the Rio Grande Valley, Texas.—Because of repeated reports of prevalence of trachoma in the citrus region of the Rio Grande Valley, the United States Public Health Service made a survey of the eyes of 11,054 school children in order to locate cases of this disease. Of the children examined in 76 schools, 44 cases were discovered, 75 more were considered suspicious, and a large number of cases of folliculosis were found. Treatment was

immediately instituted for all children showing follicular symptoms, but it was felt that the co-operation between the medical, public health, and school authorities and the high standards of personal hygiene among the American population were effective barriers against the spread of trachoma in this region.

Sight-Saving Class in Montreal.—The first sight-saving class in Montreal, and the fifteenth in Canada, was opened this past fall with Miss Florence Butler, a student of sight-saving class methods at Teachers College, Columbia University, last summer, as the teacher in charge. Although Canada has only fifteen cities of sufficient size to warrant the establishment of sight-saving classes, and two of these have a very small English-speaking school population, the Prevention of Blindness Department of the Canadian National Institute for the Blind hopes to establish more sight-saving classes throughout the Dominion.

California Helps Prevent Ophthalmia Neonatorum.—Although the use of a prophylactic in the eyes of all newborn babies is not mandatory in California, the state is encouraging the practice by furnishing doctors and midwives ampules of silver nitrate free of charge. Until recently, supplies were purchased commercially at great expense to the state; now the state laboratory manufactures its own silver nitrate at a considerable saving.

Law Penalizes Employee's Carelessness.—While workmen's compensation makes every effort to protect the employee, a recent decision emphasizes the employee's own responsibility to avoid accidents. A mechanic employed as a grinder of castings was required by plant ruling to wear protective goggles at his position; a chip struck him in the eye at a time when, he admits, he did not have his goggles on; finding the cause of the accident "wilful failure to use a reasonable safety appliance provided at the position," the court refused to award the claimed damages.

C. G. Henderson.—Mr. C. G. Henderson, founder and former president of the All-India Blind Relief Association, died suddenly in England in September, 1931. While in India on a civil service commission, Mr. Henderson realized the possibility of preventing much of the blindness that he saw on all sides, and his work, which

began as a one-man organization, has grown to embrace five of the sovereign Indian states. Mr. Henderson was an active participant at the recent World Conference on Work for the Blind, and was affiliated, through the All-India Blind Relief Association, with the International Association for Prevention of Blindness. Readers of THE SIGHT-SAVING REVIEW will remember his interesting account of preventing blindness in India, published in the June, 1931, issue.

Fifty Years of the Credé Prophylaxis.—Marking a half century since Karl Sigmund Franz Credé found that a drop of silver nitrate, placed in the eyes of newborn babies, prevented babies' sore eyes or ophthalmia neonatorum, the St. Louis Society for the Blind offered the Robert Johnston essay prize for a paper on the Credé procedure. The prize was awarded for a paper tracing the history and slow acceptance of this preventive measure against life-long blindness. The discussion following the presentation of the paper was conducted by an ophthalmologist, an obstetrician, a public health representative and representatives of agencies for the blind. All agreed that ophthalmia neonatorum should become a rarity when medical, public health and legislative action have brought about 100 per cent enforcement of prophylaxis.

Silver Anniversary of Illuminating Engineers.—The twenty-fifth birthday of the Illuminating Engineering Society was celebrated in Pittsburgh, Pa., on October 16. Although the occasion had a historical significance, emphasis of papers and committee reports was on future growth and progress. Of special interest was the paper on "Recommended Foot-Candles," by M. Luckiesh and Frank K. Moss, of the lighting research laboratory of the General Electric Company, Nela Park, Cleveland. Although the progress in lighting has been tremendous in the past twenty years, they said that the present illumination levels are by no means ideal. "An appreciation of the great difference between threshold seeing and comfortable seeing is of particular value to the lighting specialist in recommending higher levels of illumination. This knowledge will enable him to point out that, in such cases where usual work is to be accomplished at a low level of illumination, the deficiency of the lighting is compensated by an additional drain on the energy-resources of the worker."

George W. Thomas pleaded for the inclusion of daylight specifications in municipal building codes. "To design buildings for good daylighting is as important as to design them for adequate strength," said Mr. Thomas. "While injuries from structural frailness may be catastrophes for a few, the day-by-day abuse of eyesight is a malignant condition that affects all the occupants of a building sooner or later."

"The Window as a Source of Light" and "Standards of School Lighting with Suggested Requirements for a School Lighting Code" were papers of particular import to those interested in sight conservation. All the reports and papers are obtainable in reprint form from the Illuminating Engineering Society, New York City.

May Day, 1932.—National Child Health Day, celebrating the efforts to give every child health and happiness, plays an important rôle in the prevention of blindness. Well-nourished children, living in a healthful environment, in communities where physical defects are noted and corrected at an early age, have a hundred more chances of preserving their eyesight than have their less fortunate brothers. This standard is the right of every child.

Eye Compensation Awards.—The routine examination of the eyes of industrial workers, protecting employers against unreasonable compensation claims, acts inversely as a guarantee of justice to the worker. Two cases recently heard in New York State emphasize the employee's side. A railroad worker, whose vision was recorded as normal in spite of a keratitis, was accidentally struck in the eye by a stream of air, and a subsequent loss of vision occurred. The court awarded compensation on the strength of the recorded visual estimate. A meter reader for a gas company slipped on an icy step, and aggravated a previously inflammatory condition of the retina; detachment of the retina followed. Compensation was again awarded on the basis of the company's previously recorded medical and visual report.

Illumination Control for Classrooms.—In a test carried on in a classroom in Tuscumbia, Alabama, it was found that high standards of illumination produced better grades among the students. To keep the illumination of the room at a steady point, a photo-cell

control was installed, and when daylight diminished, artificial illumination was called into play by this magic electric eye. Increasing daylight, inversely, caused the electric lights to be turned off. A three months' test found that artificial illumination was necessary about one-third of the time. Another school, in Jersey City, New Jersey, has also made use of the photo-cell to control classroom illumination, with excellent results.

Trachoma Control in Cairo, Egypt.—The fourth annual report of the Giza Memorial Ophthalmic Laboratory in Cairo, Egypt, focused its major attention upon the work being done to control trachoma. While trachoma infects a large proportion of the adult population, it is most disastrous in its attack upon infants and young children. Of 139 infants tested in one village, only 19 were found to have normal conjunctivæ. While the superstitions that foster uncleanliness and neglect of the eyes in early childhood continue, little can be done to eradicate trachoma. Education in general hygiene is of prime importance in the fight against trachoma in Egypt.

Gordon L. Berry.—The National Society for the Prevention of Blindness has learned with sorrow of the untimely death, in Paris, of its former associate, Gordon L. Berry. The minute prepared and sent by the Board of Directors to the family of Mr. Berry expressed the sentiments of everyone who had the privilege of knowing him. It stated, in part: "In the early years of the National Society for the Prevention of Blindness, Mr. Berry rendered valuable service in this work as Field Secretary and in other ways contributed to this movement. His vibrant personality and his charm won him a hearing wherever he went, and he was able, by his convincing manner as well as by the substance of his message, to set forward the cause which he served. We recall the high value of his services to the Society and we record our sense of appreciation therefor."

Health Inspection for Domestic Servants.—Venereal disease in its complicating effects is usually thought to involve only the person infected. That its danger reaches out to innocent persons is apparent from news items which reach us from various sources.

In Westchester County, New York, a death certificate of a professional chauffeur showed that he had had syphilitic myelitis and optic neuritis. How far his vision was affected while he was still driving a car causes one to marvel that he had not been involved in a serious accident. Another professional chauffeur was still driving although his vision had been reduced two-thirds through syphilitic lesions, and only prompt removal from his position prevented an inevitable accident which would have involved the life and limb of many innocent persons.

In New Jersey a baby lost its sight from gonococcus ophthalmia because a nurse girl was infected with gonorrhea. The Health Department of New Jersey is now demanding that domestic workers in private families undergo at stated times the same careful health examination that must be taken by workers under the food inspection laws. A certificate assuring the freedom from disease of all sorts of a domestic worker would obviate any more such disastrous results.

Revised Study of School Lighting in Great Britain.—The report of the Sub-Committee appointed by the Technical Committee of the Illuminating Engineering Society in 1930 in Great Britain, finds that to compute the amount of natural illumination in schools it must be measured on a dull day; it further recommends a view of the sky from every position in the room, with light falling over the left shoulder, if possible, and through clear and unobstructed windows; it advises light-colored walls and ceilings and a careful avoidance of objects which might be a source of glare.

Following its work on the natural illumination of school rooms, the Sub-Committee undertook a revision of the 1913 code of artificial lighting for school buildings. Finding no modern guide to artificial lighting in the schools in Great Britain, the Sub-Committee submits the following recommendations for general guidance, pending further study and investigation:

1. Five foot-candles of light on desk and tables for usual school work, with eight for special work, and sixty per cent more for blackboards; no part of the school should have less than one foot-candle; 2. Avoidance of direct or reflected glare by use of proper luminaires, soft matt surfaces and unglazed paper in books;

3. Avoidance of shadows; 4. Consideration of placement of light sources; 5. Periodic inspection and maintenance of artificial light sources.

Annual Meeting of the International Association for Prevention of Blindness.—The annual meeting of the International Association for Prevention of Blindness took place at the Association's Paris headquarters on November 14, 1931. Among the points considered at the meeting were the creation of national committees in various countries for prevention of blindness activities and preventive measures against industrial eye accidents.

Price of an Eye.—"What is the value of an eye?" asks Dr. H. Villard of Montpellier. He finds that the loss of one eye alters visual acuity, lessening professional or industrial capacity. While the loss is heaviest in the years immediately following the casualty, it is compensated for in later years. To what extent the loss of an eye is measurable in monetary terms can be estimated only by world-wide investigation by a joint committee of representatives of the labor unions and ophthalmologists.

Save Your Eyes.—Under this title, *L'Animateur des Temps Nouveaux* of Paris devotes itself, in the 1931 issue, to the message of the International Association for Prevention of Blindness. Each phase of sight conservation and prevention of blindness is touched upon in popular tabloid style. Structure and function of the eye, amount and distribution of blindness and common causes of blindness are graphically illustrated.

Dr. Holloway Joins National Society Board.—The National Society for the Prevention of Blindness is fortunate in having as a new member on its Board of Directors Dr. Thomas B. Holloway, formerly a member of the advisory committee. A professor of ophthalmology at the Graduate School of Medicine of the University of Pennsylvania, Dr. Holloway is an attending surgeon at the Wills Eye Hospital and the author of many important papers on ophthalmological subjects. His scientific and practical experience as an ophthalmologist and at the Overbrook School for the Blind, and his excellent public health point of view, are invaluable contributions to the National Society.

National Society Notes.—Mr. Lewis H. Carris, managing director of the National Society, served on the program committee of the Third Annual Greater New York Safety Conference held at the Pennsylvania Hotel, New York City, February 24–25, 1932. He also acted as chairman of the session on "The Eye—Its Relation to Safety," on the afternoon of February 24.

Representing the National Society at the meeting of the International Council for the Education of Exceptional Children, in Washington, D. C., February 18 to 20, Mr. Carris discussed "The National Society for the Prevention of Blindness." While in Washington he also represented the Society at the meeting of the National Education Association, February 20 to 23.

In response to requests from public-spirited and educational organizations in Hawaii, Mrs. Winifred Hathaway, associate director of the National Society, is in Honolulu making recommendations for establishment of sight-saving classes and for a general conservation of vision program. En route, she will make many stops at points whence requests have come for her services in sight-saving class and prevention of blindness work.

At the conclusion of a field study on cataract, the students in the medical social eye work course at Massachusetts Eye and Ear Infirmary, Boston, called in Miss C. Edith Kerby, statistician of the Society, for consultation and advice on statistical presentation of their material.

Addendum.—We have received several communications regarding a statement appearing in the article on "Venereal Disease and Prevention of Blindness," in the past issue of THE SIGHT-SAVING REVIEW, referring to the lack of a law for the control of ophthalmia neonatorum in Pennsylvania, and a request has come for clarification. Strictly speaking, it is true that there is no law, but it is only fair to state that the lack of actual legislation is effectively supplied by a regulation of the department of health of the Commonwealth of Pennsylvania, adopted April 13, 1926.

Current Articles of Interest

Subnormal Accommodation, Avery deH. Prangen, M.D., *Archives of Ophthalmology*, December, 1931, published monthly by the American Medical Association, Chicago, Ill. Because ocular symptoms of headache, dizziness, eyestrain and apparent farsightedness frequently do not respond to refraction, the writer urges that a study of accommodation be included routinely in the refraction test. Subnormal accommodation is often a symptom of a focal infection, particularly of the teeth or tonsils; treatment of the cause, and correction, are prescribed for improvement.

The Place of the Otorhinolaryngologist in the Treatment of Eye Diseases, E. Ross Faulkner, M.D., *New York State Journal of Medicine*, November 15, 1931, published twice a month by the Medical Society of the State of New York, New York, N. Y. In discussing the intimate relationship between disorders of the nose and eye, three cases are cited where clearing of the sinus condition restored vision to the affected eye.

Ultra-Violet Ray Treatment of Trachoma, Montagu Marston, M.D., *The British Journal of Ophthalmology*, December, 1931, published monthly by the British Journal of Ophthalmology, Limited, London, England. The writer gives the details of a trachoma treatment which is neither painful nor protracted, with which he has had success. The tungsten-arc lamp, used to sterilize the conjunctival sac, proved efficacious in more than 200 cases in Hong Kong, and the patients expressed gratitude for the ease and relief of the treatment. The author recommends this procedure for schools or communities where trachoma is prevalent.

Malignant Glaucoma, John N. Evans, M.D., *Medical Times and Long Island Journal of Medicine*, December, 1931, published monthly by the Medical Times Company, New York, N. Y. Malignant glaucoma in a non-syphilitic patient responded to treatment with salvarsan, when operative intervention was impossible. The prompt drop in blood and intra-ocular tension in this case, and

again in a subsequent one, suggests that a further study of this drug in the treatment of glaucoma should be made.

Typhoid-Paratyphoid Vaccine in Ocular Inflammations, Harold F. Whalman, M.D., *California and Western Medicine*, December, 1931, published monthly by the California Medical Association, San Francisco, Calif. Twenty-one cases of ocular inflammation, treated at the Los Angeles General Hospital by the Howard method of typhoid vaccine, showed immediate improvement; while the need to find the causative infection remains, this treatment relieves the inflammation.

The Myopic Child, E. K. Hallock, M.D., *Medical Times and Long Island Journal of Medicine*, November, 1931, published monthly by the Medical Times Company, New York, N. Y. Although 80 per cent of children are born with hyperopic eyes, by the age of sixteen the hyperopia in many cases is replaced by myopia. It cannot be said that the eye load of school work is solely responsible for this increase of myopia, since factors of heredity, illness or accident may predispose toward lengthening of the eyeball. Because the myopic child, by nature of his defect, is inclined to close eye use, the trouble progresses in a vicious circle. Treatment includes wearing of glasses, frequent eye examinations, restriction of close eye work, and good illumination. The author recommends careful eye examination of all children before they enter school.

Bacterial Flora in Egyptian Trachoma, Phillips Thygeson, M.D., *American Journal of Ophthalmology*, November, 1931, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. In 16 cases of Egyptian trachoma seen in young children and adolescents no *Bacterium granulosis* was found; the author concludes that the trachoma found in Egypt does not differ essentially from that found in the white and Indian population of North America.

The Work of the Committee on Central Statistics for the Blind, Evelyn C. McKay, *Outlook for the Blind*, December, 1931, published monthly by the American Foundation for the Blind, Inc., New York, N. Y. In an effort to compile accurate figures on the blind in the United States, it was found that no uniform measure

of blindness existed. The Committee on Central Statistics for the Blind is endeavoring to formulate procedures for securing more accurate statistics; tentative classifications and record forms have been prepared by Committee members and will shortly be put to trial use.

The Care of the Eyes, Marcelli Shaw, M.D., *New Health*, January, 1932, published monthly by the New Health Society, London, England. Pointing out the fact that 50 per cent of blindness in England is preventable, the writer urges care of the eyes from early childhood, preschool vision tests, and control of venereal disease which, alone, causes 50 per cent of blindness throughout Europe.

The Etiology of Chronic Iritis, Ernest E. Irons, M.D., *American Journal of Ophthalmology*, December, 1931, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. To determine the cause of chronic iritis we must consider the relative prevalence of disease in the community; allergic as well as focal infections may be the cause in many cases.

Information that can be Furnished by the Ophthalmologist, Henry N. Blum, M.D., *New Orleans Medical and Surgical Journal*, December, 1931, published monthly by the Louisiana State Medical Society, New Orleans, La. Complete report of the findings of the ophthalmological examination may help in general diagnosis; eye findings that bear upon general diagnosis include: muscle paralysis, a symptom of intracranial pressure or of brain syphilis; exophthalmos, significant of goiter; corneal involvements as signs of nutritional deficiencies.

Tuberculin Treatment of Phlyctenular Keratitis, James Williamson, *The Medical Officer*, December 19, 1931, published weekly by the Medical Officer, London, England. Phlyctenular keratitis, attributed to active or latent tuberculosis and to general poor standards of living, may leave the affected child mentally as well as physically handicapped; tuberculin treatment, added to the usual local measures and improved hygiene, has proved a speedy and successful cure in the limited number of cases cited.

Book Reviews

SEEING—A PARTNERSHIP OF LIGHTING AND VISION. By M. Luckiesh and Frank K. Moss. Baltimore: The Williams and Wilkins Company, 1931. 241 p. plus 26 p.

This is an interesting and suggestive book. We are forced to say suggestive, rather than conclusive, because the authors are striving for results which approach accuracy or precision, terms to which they devote a chapter which, it must be confessed, is confusing rather than illuminating. The fault here, as elsewhere, is redundancy and the repetition of self-evident facts.

It is obvious that safe and comfortable vision is dependent on adequate light and it hardly needs 19 chapters to elaborate that fact. The enthusiasm of the authors is admirable, however, and their industry in the cause of good lighting is shown by the bibliography in which, among the 48 references, their names appear 27 times.

Apart from the technical details of light and its production, use and distribution, with which the authors are well fitted to deal, there appears a border ground, "a new science of seeing." "Although excellent scientific researches during the nineteenth century laid the foundation of the science of vision, the viewpoint of the investigators preceding the present century can scarcely be considered to have been that of *seeing*." There is a passing allusion to Helmholtz and none to Donders or to Duane or Ferree and Rand among the contributors to the science of vision.

This book, then, must be treated on its own ground as a treatise on the Art and the Science of Lighting. The eye remains the organ of vision and the infinite variety of its changes eludes the lighting specialist or, to dignify an honorable profession, the illuminating engineer.

The optometrist is a product of this century and is here classed with the physician trained by years of observation to a knowledge of disease and its effect on the eye, which often eludes the measurer of eyes who thinks in terms of lighting and glasses and who too often offers glasses where they are not needed or when a graver danger threatens. But there should be a common field where the

ophthalmologist, often also untrained in the valuable data here offered, and the physicist may meet.

Space does not permit a discussion of the chapter on Fatigue, and other parts of the book in which the problems have baffled wiser men.

The diagrams are in some cases helpful. The suggested visual tests do not commend themselves as useful except for research in laboratories. Until the ideal method for which the authors are striving is achieved, we must be content with our antiquated nineteenth century procedure.

Ophthalmology has made great progress in this century and the Science or Art of Lighting holds a flaming torch, but we see no need of a new science of *Seeing*.

The concluding paragraphs of the final chapter are excellent. They so well express the feelings of those enlisted in the struggle (for that it still is) for the conservation of vision that they may be quoted in closing this brief review of a book which contains much stimulating and valuable matter:

"And we need not fear the stimulating effect of light. We evolved under enormously greater intensities outdoors than we will use indoors for centuries—if ever. Good lighting makes it possible for us to do more work with less effort. We see quickly and accurately without wasting energy moving the work, altering our position, straining the eyes, etc. And we also conserve energy through satisfaction instead of dissipating it in annoyance and wasted time—whether we are conscious of this or not.

"Artificial light made our present civilization possible. Perhaps it may be considered the most important tool produced by man. It is essential to vision and the latter is the most important sense, for it is responsible for much of the economic value of human beings. But the age of adequate, efficient, inexpensive and controllable artificial light has just arrived. We have been projected so suddenly out of the 'dark age' of feeble flickering flames that most of us are still bound by the traditions of the past."

COLMAN W. CUTLER, M.D.

INDUSTRIAL HYGIENE FOR ENGINEERS AND MANAGERS. By Carey P. McCord, M.D. New York: Harper and Brothers, 1931. 336 p. Ill.

For a long time a source of information on industrial hygiene has been needed, especially for engineers and executives.

This volume presents the problems of emergency for injuries, infection and disinfection, occupational diseases, accident prevention, physical examinations, health promotion in small plants, dental services in industry, compensation for accidents and diseases, rehabilitation measures, and mutual benefit associations.

A very useful addition to the book is the list of sources of technical information on industrial hygiene.

In these days of the close association of accident prevention and health conservation in industry, this volume should fill a long-felt want for a reference work, particularly for the use of engineers and executives who must assume the responsibility for certain administrative aspects of industrial safety and health.

C. O. Sappington, M.D.
National Safety News

The Wills Hospital of Philadelphia. By William Campbell Posey, M.D., and Samuel Horton Brown, M.D., Philadelphia: J. B. Lippincott Company, 1931. 340 p. Ill.

The Wills Eye Hospital of Philadelphia has just recently celebrated its one hundredth anniversary by moving into a new and beautiful building, and as part of the celebration two of the alumni have written a history of the institution. Such volumes have been done before on similar occasions and they are generally very dry reading. This one is not, for the authors have given us a very interesting picture of the conditions existing in one of the great medical centers of America one hundred years ago; of the gradual evolution of American ophthalmology, and of the part the Wills Hospital and its staff, ever in the forefront, have played in that evolution.

Philadelphia in those days was a city of 135,000 people, drawing additional material from the rapidly growing West and the South, and yet it contained only 69 physicians. Nothing could have counted except the gravest and most emergent illnesses. In the winter, smallpox; in the summer and fall, typhoid, tuberculosis, and scarlet fever; and diphtheria knew no seasons.

The great men of that day prided themselves on being general practitioners who did surgery when they could, and any man who attempted to restrict his practice in any way was frowned upon as

"putting on side," or was even suspected of being a charlatan. Those were the days when the surgeon operated in a dress coat, carefully rolling up his sleeves before he began; when, because there was no anesthesia, speed was the chief index of skill; and because germs were unknown and infection almost universal, the mortality rate forbade all but a short list of operations.

There must have been a much larger proportion of blindness then than now; and there were many more acute infections and injuries involving the eyes. But it is astounding to see how little could be done a hundred years ago for the conditions that take most of the ophthalmologist's time today. If one's sight failed he went to the optician and picked glasses to suit himself. If they did no good he perhaps consulted a physician who perforce labelled him amblyopic or amaurotic, according to the amount of vision left. Ophthalmology was practically limited to external eye diseases. Cataract was almost the only surgical operation, and, being done in a clean eye and with instruments too delicate for other use, was seldom attended by the sepsis common to most surgery of the time.

It was under these conditions that James Wills left his modest fortune to found a charitable hospital which he dedicated to the lame and the blind. It was surely the day of small things, for we read that his bequest was something over $125,000 and that after the land and building were paid for, about half the sum remained to provide the annual income of some $3,000. The first attendants were general surgeons, many of them among the great names of that day. Our authors tell us that when lame patients appeared in the spirit of the dedication it caused no difficulty, for the same surgeons were fully as skilled in the treatment of clubfoot as of cataract, as their operative records plainly show.

Such was ophthalmology not only in Philadelphia but all over the world almost up to the time of the Civil War. It was limited to external diseases and to cataract. No one had seen the interior of a living human eye, no one knew how the eye focussed or had any better method of fitting glasses than to let the patient pick out his own from the pile. The Wills Hospital itself did not own a case of trial lenses until 1865.

In 1847 an Englishman named Babbage devised an ophthalmoscope. He showed it to Wharton Jones, the great London

ophthalmologist of the day, who could see no particular use for such an instrument, and the mortified inventor dropped the idea. Four years later von Helmholtz published his instrument and opened up a new world for the ophthalmologist. Many things that had previously inspired pompous guesswork became plain as day, and amaurosis and amblyopia ceased to be competent diagnoses.

At almost the same time came Donders, who, by putting refraction on a scientific basis, made possible a scientific treatment of functional troubles, and von Graefe, who revolutionized ophthalmic surgery. Of him our authors say, "there was no subject in ophthalmology with which he was not familiar, and none on which he had not expressed his opinion."

We find the surgeons of the Wills Hospital in 1873 ascribing an outbreak of "contagious catarrh" in their wards to crowding and bad ventilation, and, on the strength of it, getting two new wards with more space and better air.

And then came Pasteur, who showed the world germs, and Lister, who applied Pasteur's theories and gave us antisepsis, and Koller, who discovered cocaine and made deliberate eye surgery possible. There were some surgeons who considered even this a useless refinement, and one of the Wills internes records that he had to "bootleg" a few drops of cocaine into the eyes of every patient of one of the surgeons who prided himself on operating without anesthetic.

From that time on ophthalmology became naturally and necessarily a specialty because of its complicated instruments, and mathematical formulæ, and special pathological problems. No longer do we find men like Donders who lectured on forensic medicine, anthropology, and biology, as well as ophthalmology.

Our authors tell us of the leading part their institution and its surgeons have played in this growth of ophthalmology in America; of their great names and their specific contributions to ophthalmology and its literature; of the foundation of influential societies and special journals; of the part they have played in social medicine and the prevention of blindness. They also give us a glimpse of what was happening contemporaneously in other institutions and in other lands.

To the physician it is all most interesting; the brief biographies

of the long line of surgeons, colorful and appreciative; the evolution of an old operation like that of cataract as revealed by a hundred years of surgical records; of the sudden appearance in those records of newcomers like glaucoma, and the varied and still varying methods of treating it.

Each epoch-making drug or instrument is catalogued as it appeared, with the resulting changes in professional practice, i. e., cocaine, the ophthalmoscope, the tonometer, the perimeter, the tangent screen, and radiography, which have gradually carried us back from the contemplation of external diseases through the interior of the eye into the very brain itself.

And now the Wills Eye Hospital, after a hundred years, has a new and beautiful building with the capacity and equipment equal to any in the land, and our authors are already hoping that in some way the means may be provided for research which some of its contemporaries derive from their affiliation with some great university.

It is in a sense with the changing of a few names and dates the story of ophthalmology in your city and mine, for all went through more or less the same evolution at about the same time. We can only hope that if our pet institutions are old enough or important enough to merit a special history, authors may be found who can bring to the task the same patient research and sympathy and equal ability to make an interesting story out of what might have been a dull chronology.

ELLICE M. ALGER, M.D.

EYE, EAR, NOSE AND THROAT MANUAL FOR NURSES. By Roy H. Parkinson, M.D. Second edition, revised. St. Louis: The C. V. Mosby Company, 1931. 217 p. Ill.

The writer has revised the manual written five years ago for student nurses. It was primarily intended to save the time of the lecturer. "In presenting this manual, the author had in mind a small non-technical treatise that would be very concise and free from debatable questions."

Of the 217 pages, 72 are devoted to a discussion of the eye—its diseases, treatments, operations—and to the public health problems pertaining to this organ. The author has stressed throughout

the close relationship of eye diseases to the general physical condition of the patient. The manual should be of great assistance to the teacher.

The writer is to be commended for the simple presentation of the subject matter. It does seem, however, that the paragraphs on anatomy, physiology and the errors of refraction are not comprehensive enough for the student to get a clear working knowledge of the subjects. It is true that the nurse will not make diagnoses nor prescribe treatments, but she should have an intelligent understanding of both in order to carry out successfully the physician's instructions and to co-operate in the health education program.

The examination of school children's eyes is discussed under the heading, "Problems Met by the Public Health Nurse." Vision testing of preschool children is not mentioned. A discussion of the importance of vision testing before the child enters school and of the technique of such tests would add greatly to the usefulness of the manual. The author recommends the use of the picture chart for testing the vision of persons who cannot read. Many oculists do not consider this chart as satisfactory as the Symbol E chart.

MARY EMMA SMITH, R.N.

A QUANTITATIVE STUDY OF ACHROMATIC AND CHROMATIC SENSITIVITY FROM CENTER TO PERIPHERY OF THE VISUAL FIELD. By Hazel Austin Wentworth. Princeton: Psychological Review Company, 1930. 189 p.

This excellent monograph, prepared under the direction, as the author states, of Dr. Ferree and Dr. Rand, continues in part their valuable work and adds a new example of scientific patience to the rather scanty list in recent years of objective productions which, while based on precise laboratory study, throw new light on clinical problems. It is to be hoped that the author will pursue the lines so clearly indicated and so much needed, which will make diagnosis by perimetry more trustworthy. Most men who have worked with colors have felt the need of standardization and the crudeness of present methods, and, lacking the opportunity and the material to study the sensitivity of the retina with a regard for the several factors which the author shows to be essential, have had recourse to the well-known Duane-Bjerrum screen or its modification, with

small white or gray objects on a black background, except for the detection of color scotomata in such conditions as toxic amblyopia.

Whether the criteria set by the author are attainable is a question not easy to answer, but her statement of "some of the misconceptions that have been held with regard to the results that have been obtained by perimetry" clarify the issue, although one may have to discard ideas such as interlacing of fields, and even question the pathological significance of scotomata, relative or even absolute: "An inspection of the sensitivity curves presented in this paper reveals, in places, dips which may be mistaken for relative scotomata. Small patches of absolute insensitivity to color are also frequently found in eyes which, from all other recorded evidence, are classed as non-pathological." Much more might be quoted, but this is sufficient to indicate the importance of the work.

This monograph is an important contribution to a subject which, as the numerous references indicate, has been sadly in need of the painstaking, scientific treatment it here receives.

Colman W. Cutler, M.D.

Contributors to This Issue

Dr. William Campbell Posey, former president of the American Ophthalmological Society, attending surgeon at the Wills Eye Hospital, professor of ophthalmology at the Graduate School of Medicine of the University of Pennsylvania, and author of *Hygiene of the Eye,* is a member of the Board of Directors of the National Society.

Miss Mary C. McLelland is national secretary of prevention of blindness of the Canadian National Institute for the Blind.

As executive director of the American Social Hygiene Association, **Dr. William F. Snow** has often co-operated with the National Society in pointing out the close connection between prevention of venereal disease and the conservation of vision.

A member of the staff of the General Electric Company in New York City, **Mr. Thomas A. Pilkey,** lectures annually to several thousands of people, in both technical and lay groups, on the subject of illumination.

Miss Eleanor P. Brown is secretary of the National Society for the Prevention of Blindness; medical social service in eye clinics has been her special interest since its inception and she has represented the National Society in many medical social projects.

Among the book reviewers: **Dr. Colman W. Cutler** and **Dr. Ellice M. Alger,** New York City ophthalmologists, have both been introduced in previous numbers of THE SIGHT-SAVING REVIEW; **Dr. C. O. Sappington** is director of the Division of Industrial Health of the National Safety Council; **Miss Mary Emma Smith** is director of nursing activities of the National Society.

The Importance of Social Service and Follow-Up in Preventing Blindness*

Conrad Berens, M.D.

THE National Society for the Prevention of Blindness will co-operate next fall with Washington University, St. Louis, and the Massachusetts Eye and Ear Infirmary, Boston, in giving special training courses for medical social service workers in eye hospitals and clinics. The following article is a good introduction to the subject

FROM the study of hospital and clinic records and the service rendered to eye patients, it is evident that eye hospitals and clinics without adequate social service departments are doing incomplete and inefficient work and are failing in one of their most important duties, namely, that of preventing blindness.

Before we consider specifically the value of social service and follow-up work in eye clinics, it may be profitable to consider the whole problem of clinic service and especially the great growth of this work in New York City.

Growth of Clinic Service

Fifty years ago there were only twenty-two clinics in New York City; today there are more than 350. Many of these have eye services and in many others treatment is prescribed for conditions which may lead to blindness in the afflicted patient or in his offspring. Since prevention of blindness is accomplished largely through the medium of the eye clinic it is imperative that well-trained social workers who have special knowledge of eye work be in attendance during clinic sessions. Many eye clinics in New York City today have no social workers in attendance and this is also

* Read before a meeting of the Welfare Council of New York City, February 29, 1932.

true of many other clinics where conditions which may result in blindness are treated. I know of only one eye clinic in New York City in which there is a sufficient number of social workers to assure adequate care for the patients. One great eye clinic treating 30,000 new eye patients a year has the full time of one social worker and the half-time of another.

The increasing scope of the dispensary service also makes the aid of the social worker more necessary. The original dispensary was composed of a general practitioner and possibly a pharmacist. Today we have not only the medical and surgical clinics but the gynecologic, genito-urinary, pediatric, dental, mental, neurologic, orthopedic, eye, ear, nose and throat, obstetric, proctologic, cardiologic, tuberculosis, immunologic, and physiotherapy clinics, not to mention special clinics for health examinations, nutrition, and many laboratory services—bacteriologic, pathologic, roentgenologic, etc. In addition to this the clinics have their nursing service, health education, medical education, and, last but not least, research departments. A social service worker can interpret to the patient the relationship any one of these services may bear to his particular eye difficulty; she can see that proper care is obtained from such departments as may be indicated and that the necessary reports are available to the ophthalmologist.

The Great Importance of the Out-Patient Service in Ophthalmology

It is fortunate that the out-patient is receiving more and more attention because it is here that the earliest signs of disease are detected and the most valuable work in prevention can be accomplished. In 1923, when making special studies of the clinics in New York, we found that, in 45 member institutions of the associated out-patient clinics, four patients were treated in the clinic to one in the ward. In other words, there were 287,000 ward patients and over a million clinic patients. If work of any value in the prevention of blindness is to be carried out, it must be begun in the clinic. Our studies showed that too many patients who have eye diseases which may result in blindness attend the clinic only once. Naturally, some of these patients go to other clinics or to private physicians. It is also true, though unfortunate, that a certain number are permanently blind because they did not understand the serious-

ness of their condition or because some unforeseen incident prevented their return to the clinic.

A well-organized social service department with adequate personnel will certainly prevent much unnecessary blindness. The inadequacy of the system in most clinics was shown by a special study of 5,200 records in five representative eye clinics in New York. In 1922 it was found that of 193 patients who had serious eye diseases which might result in blindness unless given continuous medical care, 103 attended the clinic only once. One of our most striking findings was that 81 per cent of the patients with glaucoma made three visits or less, and it is well known that in this disease the patient should be observed from time to time during the remainder of his life.

What are Some of the Functions of the Social Service Department in Relation to an Eye Service?

Reports on the personality and environment of the patient and assistance in overcoming obstacles in his treatment are important functions of the social service department. Sometimes provision must be made for escorting to the hospital those patients who are feeble or have greatly reduced vision; sometimes the purchase of medicine or glasses for those who are unable to buy them may aid in preventing blindness. Partially blind patients are sometimes placed in sight conservation classes. In some cases home treatment must be provided and in other cases patients must be directed to institutions for the blind. Persistent follow-up of those who have been operated upon and of those whose eye diseases may result in blindness is a valuable service of the social worker. Finally, the well-organized social service department will correlate the work of the many departments of the hospital and assure completion of the records so that they may be available for research, teaching, and educational work.

The Value of a Follow-up System in Preventing Blindness

The first question probably will be: Why have a follow-up system? If the patient wants to come back, he will come back; if not, he will stay away. This, however, is not true in practice because it has been found that before follow-up systems were instituted, from

50 to 75 per cent of the patients failed to return after the first visit. With the follow-up system the number of patients who fail to return is reduced to 20 per cent or less in most clinics.

Of course, it is impractical to follow all cases in the clinic, but the associated out-patient clinics of New York suggested a group of cases which should be followed up in ophthalmological clinics; among these were cases of glaucoma, optic atrophy, uveitis, retinitis, trachoma, and several other diseases. If it were possible to follow only one group, for example, the glaucoma group, the workers would be amply repaid by the number of patients who would be spared permanent blindness.

Follow-up Work as Applied to the Care of Certain Eye Diseases

Cataract.—The social worker interprets the diagnosis to the patient, seeks his co-operation, and endeavors to remove any obstacle which may block the effectiveness of the prescribed treatment. Some of the greatest authorities believe that the development of certain types of cataract can sometimes be arrested in the early stages and at times the vision may even be improved.

Since many cataracts are complicated by inflammatory diseases, the removal of foci of infection and the improvement of the patient's hygiene are most essential. The social worker may be the factor in making this possible. Knowing that individuals, exposed to excessive glare and heat while working, are prone to cataracts, it is important that working conditions be controlled.

Because conditions that interfere with the nutrition of the mother may result in development of cataract of the newborn child, prenatal care should include proper nourishment of the mother.

Patients sometimes become discouraged because they do not see well as soon as the cataract is removed and if the patient is told by the social worker that he will probably see well eventually, especially after glasses have been prescribed, and that he cannot expect to see well immediately with an organ he has not used for several years, valuable service can be rendered.

Syphilis of the Eye.—The interpretation of the disease in its relation to the eyes and the need of prolonged treatment by the syphilologist should be made clear to the patient or his guardian by the social service worker. During the long period of treatment she

may assist in sustaining the morale of the patient, in improving his hygiene, and by offering suitable opportunities for education to children whose vision is already affected. When syphilis is found in one member of a family, serious complications may sometimes be prevented in other members of the same family by careful studies of their blood.

Tuberculosis of the Eye.—This serious disease, which causes a large amount of blindness, is one in which the social worker can play an important part by studying the patient's environment, improving living conditions and diet, and by seeing that the patient is able to receive continued supervision and treatment. Arranging for convalescent care and subsequent employment may mean not only the saving of vision but also of life.

Glaucoma.—In the surgical treatment of glaucoma, the social worker can be of invaluable service to the patient. In two respects particularly is this possible: first, by making clear to the patient the character of the disease, and that peripheral vision (sight on all sides) is first destroyed while central vision (sight in the center) may be normal, but somewhat limited; and second, by pointing out the necessity for operation without delay when it is indicated, because successful operation in chronic glaucoma will improve the vision but slightly, since a certain amount of destruction has already taken place through the increased pressure in the eyeball. Furthermore, if operation is delayed so long that the eye is almost blind, operation is useless, and need not be performed except perhaps for relief of pain or for preservation of the eyeball. It must be understood also that the risks of surgical treatment depend not only upon the skill of the surgeon, but also upon the hours of delay before operation and the character or type of glaucoma for which operation is performed. When glaucoma is of the acute congestive type, when pain is intense and the vision suddenly reduced to counting fingers, operation is usually accepted without delay, and the successful operation is gratifying because the pain is relieved and the vision may be completely restored. It is important to remember that after the operation has been performed, the same medical social care is necessary and imperative as that required previous to operation. The most important function of the social worker is to see that patients with glaucoma have continued care

of their eyes, that they understand that they will probably have to use drops in their eyes the remainder of their lives even if they are operated upon. She should also see that complete general studies of the patient are made and that everything possible is done to improve the general health and eliminate causes of nervous strain, because it has long been realized that a glaucomatous eye is a "sick eye in a sick body."

A close follow-up of all glaucomatous patients and a knowledge of their habits and social backgrounds are most important. The social worker strives to avert worry on the part of the patient, both by the interpretation of the disease and in the explanation of the treatment. The patient should be safeguarded from family annoyances by enlisting the interest of his kinsfolk and making clear to them the dangers of the disease.

Relief from symptoms, and not a cure, is all that can be expected in the treatment of glaucoma; therefore, continuous observation is imperative when the patient is under miotics; and also after operation, lest unobserved progress be missed when prompt treatment or a second operation might avert disaster.

Corneal Ulcer.—The social worker must ascertain the cause of corneal ulcer and its gravity in order to make the interpretation correctly to the patient and to advise him intelligently as to hygienic measures. Much may depend on an improved standard of living. A wholesome diet is all-important, as is attention to sanitary precautions to avoid transmission of the infection. Teaching the housewife economical purchasing and preparation of food may be considered time well spent by the social worker, who can impress on parents the handicap which scars from improperly treated ulcers may be to the future earning power of their children.

Conditions of work in the case of employed persons should be explained to the physician in order that he may advise suitable precautions or a change of occupation when necessary. Proper illumination of working places is important as in some instances protection of the eyes from improperly placed or excessive light will make it possible for the patient to continue his occupation.

Trachoma.—In trachoma, if the cornea is involved or if photophobia (fear of light) and disturbance of vision are noticeable, protracted use of the eyes may be harmful. During the stage of

purulent discharge from the eyes, exclusion of trachomatous children from school is justified, as is insistence on sanitary precautions which should be followed in the case of all eye disease of either frankly or questionably infectious nature. The social worker is essential in making these arrangements.

Papilledema.—Every case of papilledema is a social problem. The social worker may be of great assistance in keeping the patient loyal to one clinic or hospital so that a diagnosis may be made and proper treatment instituted.

When the breadwinner of the family is afflicted the social worker's help in solving the economic problem and in making necessary adjustments is invaluable.

Optic Neuritis.—In general, when occurring with an infectious disease such as influenza or pneumonia, optic neuritis appears during the acute stages of the disease and not in the course of convalescence. However, by watching for symptoms of eye troubles after acute infections, the social worker may occasionally be of value in helping to discover a beginning inflammation caused by latent infection in the sinus or upper respiratory tract.

Headaches with nausea and disturbance of vision may be indicative of brain tumor, particularly if accompanied by weakness of hands or feet. Though not of frequent occurrence, the social worker should be aware of this and of the seriousness of any inflammatory condition in connection with the optic nerve. Early recognition and treatment may be the means not only of saving a patient's sight, but life itself.

Senile Macular Disease.—This is a disease usually seen in adults. It affects the center of the back of the eye where vision is most acute and often progresses to such a degree that the patient is unable to read. If patients with senile macular disease are seen early and the cause is determined and eliminated, useful vision may be retained. This is only possible by obtaining the patient's continued attendance at the clinic and by co-ordinating the various services in order that the patient may be thoroughly studied from every standpoint.

Strabismus (Squint).—The fallacy that squint will usually be outgrown should be combated, because these so-called cures by nature are usually more apparent than real. Examination of the eyes

in supposedly cured squint usually reveals a marked degree of squint and also partial blindness from non-use of one eye. The reason the eye becomes relatively straight is that it is partially blind and is no longer so annoying to the patient. Children with squint should be examined immediately, proper glasses prescribed even at the age of one year, and exercises to improve vision and obtain simultaneous use of the eyes instituted. The social worker may render service by stressing the necessity for continued supervision and operation when the ophthalmologist is certain that glasses and exercises no longer offer hope of permanent cure.

Progress Attributable to Social Service in Eye Clinics

In a restudy of the recommendations made at the time of the 1922 survey of eye clinics referred to above, it is appalling to find how large a proportion of the records are still incomplete, and how few of the serious eye cases registered at that time ever came to the attention of the social service department. It is evident that in spite of the original investigation and recommendations social service departments have only to a very limited extent been utilized in keeping patients under observation until treatment was completed, with the inevitable sequel of increasing blindness and unnecessarily impaired vision.

A recent study of 47 eye clinics in Manhattan, Bronx, Brooklyn and Queens showed that social service is available for 31 of these clinics. It is evident that the ophthalmologists themselves do not always recognize the value of social service and follow-up work in the care of their patients. The reasons why social service is not available in 14 of the 47 eye clinics are varied. In some cases it was because there were no social service departments; in others the departments were too busy, and in others the ophthalmologists themselves did not demand this service. It was also shown that there was so much work to be done in these clinics that only three of the 47 have any systematic follow-up. From these studies it was quite evident that more social service workers are needed; that the physician should be instructed to use the social service department, and that more follow-up work is needed to assure the proper treatment of patients, to conserve the physician's time in making his records valuable for research and teaching, and to prevent blindness.

It was also evident from these studies that follow-up work, to be really successful, must begin with the physician and is most effective if he can gain the confidence of the patient by his thoroughness, his personality, and particularly by his interest in the patient. Confidence will be increased if the physician has time to explain the condition to the patient personally; if not, the day may yet be saved if the social worker can explain the condition to the patient and show a real interest in his welfare. Written instructions and explanations are of value to supplement interviews and consultations. Several pamphlets* giving written instructions to patients have been prepared by the Committee on the Development of Social Service in Eye Clinics. They have the following titles: Information for Those Who Have Areas of Opacity in the Crystalline Lens (Cataract); Information for Those Who Have Myopia; Information for Teaching Those Who Have Ocular Syphilis; Information for Those Who Have Phlyctenular Keratoconjunctivitis; and Information for Those Who Have Glaucoma.

The type of follow-through suggested, then, is really "case control" which anticipates and prevents the usual reasons for incompleted and unsuccessful treatment.

Conclusions

The most valuable work in preventing blindness is undoubtedly to be done in the eye clinic. Evidence in this paper indicates that much blindness could be prevented if the lack or inadequacy of social service and follow-up work could be overcome and its great possibilities fully appreciated by ophthalmologists and hospital and clinic trustees.

*These may be obtained from the National Society for the Prevention of Blindness, 450 Seventh Avenue, New York, N. Y.

Eye Accidents in Child Play

C. Edith Kerby

SOME eye injuries to children may be prevented by legal provisions or regulations—but the greater responsibility rests with parents, who must be educated to the dangers inherent in certain toys and other objects commonly used by children in play. Here is the report of a study on this subject which has just been completed by the National Society for the Prevention of Blindness

IN THE various residential and day schools and classes for the blind in the United States, there are approximately 500 pupils who have been blinded by accident. Each year about 70 new pupils whose blindness is due to this cause are added to the total registration. Of course, trauma (or accident) is not the most important cause of blindness among students in such institutions; on the average about one out of 11 is so blinded. It is true also that, compared with the total school enrollment of 28 millions in the country, the figure is not large. From this point of view one might perhaps be tempted to dismiss the subject as having too little significance, particularly if one can obtain peace of mind by assuming the fatalist's attitude that accidents are inevitable. But there is another angle of approach—the human angle. To the 500 children affected, and to their relatives, friends and physicians, such accidents have the significance of major tragedies. They ask, "Cannot these accidents be avoided?"

As a matter of fact the present study was set in motion by the appeal of a prominent ophthalmologist in New York City, who, during the spring of 1931, had worked in vain to save the vision of three children after they had been severely injured by B.B. guns and arrows.

Our inquiry started as an investigation to discover what legal measures had been adopted locally to prevent accidents from air

rifles and similar devices. To the governors of all states, the mayors of cities with a population of 50,000 or more, and the executives of local safety councils, a request was addressed for information concerning the legal provisions for prohibiting or regulating the sale or use of air rifles and similar devices. In addition, a summary was made of the eye casualties reported in the newspapers of the entire country during the months of June, July and August to determine how frequently such accidents occur and what other causes are proving serious eye hazards to children.

The air rifle in child play can seriously damage the eye.

Naturally, returns from these sources do not give us a complete picture of the situation. They are, however, sufficient to show what the chief hazards are, to serve as a basis for estimating the extent and importance of the problem and to suggest the steps that may be taken to reduce the number of casualties of this type.

Data on eye accidents of children as gathered from newspaper clippings are chiefly important for the information they give us concerning the causes of eye accidents. The percentages given in Table I show the probable distribution, by cause, of children's eye accident cases during a year, after adjustment has been made for seasonal variations.

TABLE I. ESTIMATED DISTRIBUTION OF CHILDREN'S EYE ACCIDENTS BY CAUSE, AS INDICATED IN NEWSPAPER REPORTS*

Cause	Per cent of total cases occurring
WEAPONS	31
Air rifles, B.B. guns, shotguns and other small calibre rifles 12%, blank cartridge and cap pistols 3%, large calibre firearms 1%, homemade guns and cannons 2%, slingshots and rubber band flippers 7%, arrows 2%, stones and other objects used as missiles 3%, tear gas guns 1%	
FIREWORKS	23
Firecrackers 13%, torpedoes and bombs 8%, fireworks (including night fireworks and unspecified) 2%	
EXPLOSIVES	10
Gunpowder and dynamite (including empty cartridges, caps and cannisters) 6%, chemicals used in experiments 2%, other explosives (including gasoline and pop bottles) 2%	
SHARP POINTED OBJECTS	11
Knives and scissors 3%, sticks, nails, wires and hooks 8%	
FLYING PARTICLES	8
Chips of steel, wood, glass 5%, dust, sand and other objects 3%	
GAMES AND SPORTS	5
Baseballs and bats 1%, golf balls and clubs 1.5%, horseshoes 0.5%, fishing and swimming 0.5%, spinning toys (tops and propellers) 1.5%	
AUTOMOBILE ACCIDENTS	3.5
FALLS	3
BURNS (chemicals and hot objects)	2
ALL OTHER	3.5
ALL CAUSES	100%

* Since cases were available for a three-month period only, the yearly totals have been estimated at 4 times the total for June, July, and August, except for sports, which were included as having only a three or six months' season, and fireworks, which were increased by only 10 per cent to cover Christmas celebrations in the South.

No figures are shown in the table for either the actual number of cases reported during the three-month period or an estimated total for the year, since it is felt that the number of cases obtained from this one source would be far below the actual total. This proved to be true in the case of New York City where a check-up showed that only half of the fireworks cases treated in the eye clinics were reported in the newspapers, although most of the dailies had featured special summaries of "Fourth of July casualties." For air rifle and other weapon cases the proportion of cases noted in the press was very much less. Likewise, when the number of cases involving blindness of both eyes as reported in the papers is compared with the figure for the number of such new pupils registered in schools for the blind, it is found that apparently not more than half of the cases are being picked up by the press. If this is true, it is probable the number of eye accidents to children occurring in a single year may run into the thousands.*

Weapons as Causes of Accidents

A glance at the figures in Table I will show that more than one-half (54 per cent) of the eye accidents to children are due to two groups of causes—weapons and fireworks—and that of these two the weapon group** is the more important. The latter fact will no doubt be a surprise to many people who still think that the "toy" gun in any of its various forms is a proper plaything for a child.

The detailed figures for the different types of weapons are of interest. The most numerous group (12 per cent) is caused by the small calibre rifle commonly known as an air rifle or B.B. gun. Such guns are eagerly desired by boys who wish a "real" gun like Dad's. Very realistic indeed is the damage that such a gun may cause to the eye which is struck during a game involving war, banditry or hunting. Moreover, it is by no means sufficient insurance against accident to confine the original gift to the older teen-age boy or to present the rifle without ammunition. The younger

* Our estimated annual total of cases noted in the newspaper, based on three-months' experience, shows from 750 to 1,000 accidents.

** The figure 31 per cent for this group is believed to be conservative since it is estimated as four times the actual total for June, July and August, with no allowance for increased activity during the fall hunting season or following Christmas when there are many newly acquired "toy" guns.

boy can easily come into possession of the gun by borrowing or swapping and he or his small sister may inadvertently come within range of the gun, while an unloaded gun is only a challenge to the ingenuity of the child himself to supply his own ammunition.

Among the other types of weapons which are causing eye disasters are the blank cartridge and cap pistols, often considered safe because they contain no projectiles, but dangerous to the user since the flash which occurs as the gun is aimed and fired is very near the eye. Then there are the large calibre firearms belonging to adults but sometimes left around where a child may handle them, and the homemade guns and cannons with their uncertain actions. Slingshots and rubber band flippers of various types are usually homemade affairs having a serious twofold hazard. With them a missile may be projected with considerable force into the eye of a bystander, or they may snap back and strike the user. It will be noted in Table 1 that this type of accident stands second in importance among the weapon group. The remainder of the accidents in this group were caused by arrows, stones and other objects used as missiles and, in a few cases, by tear gas guns, the latest adult weapon containing chemicals capable of producing acid burns.

Fireworks

Fireworks cause 23 per cent of all eye accidents to children. It is extremely fortunate for the children that this type of plaything is not available for the celebration of all holidays. An idea of the seriousness of this hazard may be gained by noting that the boys and girls of the United States are exposed to more eye hazards during a few days around July 4 than they are during 100 days at any other time of the year. The variations in the circumstances of firecracker accidents are usually such as to increase the eye hazard—for example, holding the firecracker in the hand brings it nearer to the eye, while placing it in a bottle, tin can, iron pipe, etc., makes a bigger and better explosion and incidentally the fragments hurled about are more destructive.

Torpedoes with their contents of small pebbles, so admirably suited for penetrating the eyeball, are also a prolific source of trouble. About 8 per cent of all cases are due to them.

Similar in nature to both the weapon and fireworks groups are the accidents which are due to explosives—10 per cent of all cases. Supposedly empty gun-powder cannisters, blasting caps, etc., are responsible for most of these cases. Moreover, most of the cases of

Supervised play offers safety and excitement

this type have extremely serious results. For example, in a single explosion in which a boy applied a burning match to a dynamite percussion cap, three boys received permanent injuries, two of them involving the eyes.*

Sharp Objects and Flying Particles

Another variety of eye hazard which is not only numerous (11 per cent of the total cases) but very serious in its consequences is the group due to sharp or pointed objects. This is, moreover, a type of accident which is comparatively frequent among the younger age groups, the preschool child or the younger school child. The little child's skill in manipulating articles such as jack-knives or scissors is none too sure and when the inevitable slip occurs the eye of the child or his playmate may be perilously close. Too frequently, also, one finds a child, too young to have the slightest conception of safety, brandishing a pointed stick with utter abandon. That there are not more accidents from this cause seems quite miraculous. Then there are the objects so placed that they are on the eye level of the child who may run against them in his play. One of the most tragic casualties in this group was the result of an encounter with a lilac bush. A little girl ran against the bush in her play, getting a tiny splinter of the wood into her eye. Lockjaw developed and the child died.

Flying particles caused 8 per cent of the eye accidents. These cases may be divided into two main divisions. First, there are the cases in which a chip of wood, steel, etc., flies into the eye during a carpentry or wood-chopping job. Incidentally, adults should be reminded that in an industrial plant employees have the protection of goggles while working at occupations of this nature. The second division includes accidents caused by dirt, cinders or sand set in motion by the wind or other forces. In any family minor accidents of this sort occur almost daily with no serious consequences. Danger from infection arises when the cornea of the eye is scratched either by the particle or by the untrained person who is called upon to give first aid.

* Of special interest in this connection is the safety education material on the subject of blasting caps as a cause of children's accidents, which is issued by the Institute of Makers of Explosives. Posters, leaflets and a motion picture film may be obtained upon application to the office of the Institute at 103 Park Avenue, New York City.

Other Hazards in Play

Apparently most outdoor games and sports are comparatively free from eye hazards. Not many kinds of games were reported as causing accidents. The total for all those noted was found to be about 5 per cent.

Among the less frequent types of eye accidents are those due to automobile accidents, to falls and to burns. The auto accidents noted in this study included some in which the eyes were cut by broken glass and also some involving blows on the eye or head. In one of the latter cases the blow was of such force that the eye was knocked out. Similar results may also occur in falling. The burn cases were due in part to chemicals (such as iodine and ammonia) splashing into the eye and in part to hot objects (such as a curling iron and a lighted cigarette).

In passing, it should be mentioned that the victims of eye accidents are usually boys, the proportion on the average being one girl to four boys. Girls do not go in for adventures involving fireworks, firearms, and explosives in a large way, although they are not always able to keep out of range of the more daring sex.

Legislation Necessary to Prevent Play Accidents

Having called attention to the destructive qualities inherent in certain playthings which are commonly allowed children, it would seem that no further argument is necessary to prove that it is the plain duty of adults to see to it that boys and girls are deprived of these so-called "toys." The only question is how this may be accomplished.

In the case of articles which are produced entirely for the toy trade the obvious method would seem to be to prohibit their manufacture and sale, thus cutting off the supply at its source. Air rifles, cap pistols, slingshots, darts and similar devices for projecting missiles by means of springs, compressed air, etc., as well as fireworks (exclusive of the display types) and all of their homemade substitutes, fall into this class and could well be dispensed with. In addition, the exchange, use and possession of many articles such as display fireworks, firearms and explosives, could be so controlled as to prevent the possibility of their coming into the possession of children and youths. A reference to the table on

causes will suffice to show that if such a program of legislation could be made effective throughout the country the number of eye accidents to children could be reduced by more than half.

Let us see what the records show about existing legislation and its enforcement. Since our study was started as an inquiry into the eye hazard from air rifles and similar devices, the information which we have as to local ordinances covers that subject only. As noted above, we requested copies of all state laws and of city ordinances in the group of 183 cities having a population of 50,000 or over.

In general, this subject has not been made a matter for state regulation, but comes under the police powers of the individual cities. Of the 134 cities for which reports were received on this subject, 27, or one-fifth, have no prohibiting ordinances whatever and five have only partial protection under their general firearms laws or police confiscation rulings. The 102 cities having specific legislation, either in state laws or local ordinances, or both, show a very considerable variety in scope. In order that the reader may have a general picture of the nature of such legislation, we give in Table II a brief summary showing the types of articles prohibited and the nature of the prohibition.

TABLE II. LEGISLATIVE REGULATIONS CONCERNING AIR RIFLES AND SIMILAR DEVICES, CLASSIFIED BY ARTICLES COVERED AND ACTS PROHIBITED*

Type of articles prohibited	Per cent of reporting cities having laws prohibiting:				
	Manufacture	Sale	Use	Possession	One or more of specified acts
Air rifles and air guns	1	31	48	21	63
Toy guns or pistols	..	28	20	10	34
Slingshots or similar devices	14	19	19	24	34
Bows and arrows or darts	..	..	7	3	7
Missiles or projectiles	..	2	22	7	24
One or more articles	9	37	63	38	76
All articles specified above	..	13	11	4	..

* Based on reports from 134 of the 183 cities with a population of 50,000 or more.

It will be seen that although the proportion of communities having some regulatory provisions covering one or more articles in the weapon group is comparatively high (76 per cent), this must be largely discounted because there are so few cities in which the regulations are either specific or broad enough to cover all types of weapons which are causing eye accidents. For example, only one out of eight cities (13 per cent) prohibits the sale of all of the articles specified, one out of nine cities (11 per cent) prohibits their use, one out of 25 (4 per cent) prohibits their possession. In very few cities is manufacture of such articles forbidden and in these the prohibition refers only to slingshots in every case except Denver, Colorado, which alone forbids the making of air guns. The most commonly mentioned article is the air rifle. About two-thirds (63 per cent) of the cities reporting have ordinances prohibiting their sale, or use, or possession, or two or more of these acts, while only one-third mention in their regulations other types of toy guns and slingshots.

There are a number of exemptions or limitations noted in the regulations. About one-half (38) restrict the legislation to minors of a certain age. Other exemptions are: During military drill (22), with special permit or license (14), in shooting galleries or rifle ranges (10), on private premises (11), with the consent or in the company of parent or guardian (2), and cap pistols (5). Since it is not clear that the permission of parent or police department or the privacy of the grounds would afford adequate protection against accidents to the child, at least these exemptions might well be struck out of the ordinances. Nor should any exception be made in favor of cap pistols which, as we have seen, involve an eye hazard.

As might have been expected, there were actually more cases reported in proportion to population in cities having no ordinances or inadequate regulation than in cities having laws covering the article mentioned as causing the accident. Those cases occurring in cities having adequate legislation point to laxity in enforcement.

Indirectly, through statements made in the newspaper reports of Fourth of July accidents, we learn that progress in the complete elimination of this hazard by law is hampered by the fact that such legislation is not universal. A single small town having no legislation may act as bootlegger and sell fireworks to inhabitants of sur-

rounding communities which are presumably protected by ordinances.

In some of the laws regarding the use of firearms, "the owner or any person having charge or control thereof" is forbidden to permit a minor to handle or use such weapons. Would it not be feasible to include a similar provision covering dangerous articles, such as blasting caps and other explosives, firearms and display fireworks, which must be kept out of the hands of children and others who do not understand their dangers?

No attempt has been made in this article to set up a model ordinance for general adoption throughout the country. Instead we have tried to make clear the *need* for such legislation and in addition to suggest the articles that should be prohibited and, in a general way, the nature of the regulatory provisions that are required to cover the situation.

Summary

Eye accidents to children are probably much more numerous than is generally believed. Moreover, because of the extreme seriousness of a handicap such as blindness, the subject of the elimination of eye hazards from child life is one which deserves the attention of adults. In the schools and classes for the blind in the United States there are 500 pupils whose blindness is due to accidents and about 70 are added each year.

Findings of a study in which newspaper reports were used as a basis indicate that almost two-thirds of the eye accidents to children are due to weapons (air rifles, slingshots, arrows, etc.), fireworks and explosives.

For the purpose of eliminating the hazards from weapons, fireworks and explosives the National Society for the Prevention of Blindness would strongly recommend that prohibitory legislation be passed where it is not now in force and, in communities having partial provision only, that ordinances be strengthened and broadened. At present legislative provisions on these subjects are far from adequate in that they neither cover all of the articles which are proving dangerous or all of the acts which should be prohibited.

It is suggested that all articles such as air rifles, cap pistols, slingshots, darts, other devices for projecting missiles, firecrackers,

torpedoes, etc., which are being manufactured for the toy trade should be eliminated at the source by an absolute prohibition on their manufacture and sale. In addition, the exchange, use and possession of articles such as display fireworks, firearms and explosives should be controlled by regulations in which the adult owner or user is made responsible for preventing minors from handling or using them.

Finally, there is need for continued education of both children and adults concerning the eye hazards that are inherent in many objects which children commonly use in their play. Parents, teachers and others interested in the welfare of children are urged to support local authorities in their efforts to obtain and enforce prohibitory regulations covering weapons, fireworks and explosives and to guard the child against dangerous playthings day by day.

Illumination and Eyesight in Industry*

Le Grand H. Hardy, M.D.

IT is estimated that about 40 per cent of industrial workers have defective vision due to ocular defects. This number is probably being increased by unhygienic lighting conditions; and poor illumination augments the ocular deficiencies already present

ALL preventable accidents due to defective eyesight involve at at least two factors. These are illumination and proper vision. Either may bear the burden of responsibility or they may share it. Other factors including the physical, emotional and psychological status of the individual involved, contribute to a greater or less degree in these, as in all preventable accidents, but the influence of proper illumination and proper vision seems so obvious and is yet so disregarded in general industrial practice that it becomes well worth our time to consider some of the means whereby this influence operates.

"Eye fatigue" and defective vision are two of the common causes of accidents. The condition usually is traceable to one of two sources: the environment or the eye. The most common environmental cause of eyestrain or poor vision is defective illumination. To eliminate this cause is, in most cases, not only possible but economically profitable. It has been noted that good illumination is not only cheap but that it is unique among the safety devices in that it assists rather than impedes operation. This notation is worthy of emphasis for it indicates a safety factor which is independent of the intelligence and co-operation of the employee, which avoids the poor psychology of mandates, rules and disciplinary procedures and the costs of educational programs in that it practically always receives the approval of those whom it is

* Presented before the Greater New York Safety Conference, February 24, 1932.

designed to protect; which augments rather than decreases the efficiency of the operator, thus avoiding the criticism directed toward many safety devices; and it increases the morale of the employees.

That the possible benefits to be derived from eliminating this cause of defective vision and accidents have not generally been appreciated, and have but rarely been achieved is the conclusion of all who have studied the subject.

Incidence of Defective Illumination

Of 50,000,000 incandescent lamps installed in our industrial plants, less than 25 per cent are so installed or equipped that they will not produce glare. Glare is but one of the defects of industrial illumination. There are other ways of arriving at the probable incidence of defective illumination and its effects upon vision and accident-rate but, unfortunately, few extensive controlled investigations have been made. This is probably due to the fact that the engineer, like the doctor, hesitates, for the sake of control, to withhold benefits from a large proportion of those who seek his advice. Stimson who made the most valid studies of hundreds of thousands of accident reports, placed, in 1910, the responsibility for 23.8 per cent of 91,000 accidents upon defective illumination. This is roughly one out of every four. Despite the improvement in illumination which has occurred in the past 20 years, his most recent surveys indicate defective illumination or defective vision to be the cause of 15 per cent of our accidents. This is the only controlled study I have discovered. Interesting confirmatory evidence of this relationship is supplied by the British Industrial Safety First Association.

The Cost of Defective Illumination

The Illuminating Engineering Society estimates that we are losing the services of 125,000 men annually through accidents due to poor lighting. These terms have been translated into dollars as follows: if only 15 per cent of industrial accidents are caused by poor lighting, the annual toll is $150,000,000. The direct cost has been shown to be but one-quarter of the total cost due to time lost by fellow employees, foremen, supervisors and other executives, damage to machinery, tools and materials and interference with

production. The public health cost of this condition has never been evaluated satisfactorily.

Defects in Illumination as a Cause of Defective Vision

Some common defects of illumination relate to: (1) Intensity or quantity; (2) quality or spectral composition; (3) distribution; (4) steadiness; (5) diffusion; and (6) direction.

Intensity.—Intensity and distribution have received the most attention as common defects. The most careful survey of these factors has been made by the United States Public Health Service in the New York Post Offices. This is one of the few scientific studies reported and is rapidly becoming a classical reference. While this survey shows definite correlation between improved illumination and efficiency and poor illumination and ocular defects it contains no report of accidents. It may be inferred that the poor efficiency would have resulted in physical accidents in other types of work. That is, if we do not see quickly and accurately we will probably have more accidents. The poor vision may cause an accident either by plunging us into a misunderstood or unperceived situation or by delaying our reaction time until it is too late to avoid an accident. Here a split part of a second may be important. It takes twice as long to see at 3 foot-candles as at 30 foot-candles. Most workers have defective vision. Workers with subnormal vision show the greatest improvement with better lighting. Further, at any illumination, the defective eye requires more time to see. These significant data are presented in graph form in the Standards for School Lighting and laboratory investigations have been verified in practice. Pictures have been published showing the actual conditions under which accidents occurred, and demonstrating the causal relationship between insufficient light and the accident. In one plant there was a 75 per cent decrease in accidents following the installation of modern illumination with no other changes. The results of careful studies by engineers have been incorporated into the Code of Lighting for Factories, Mills and Other Work Places, published by the Illuminating Engineering Society.

Quality of Illumination.—The quality of light refers to the spectral distribution of the energy in that light, and most authorities

agree that the more nearly this approaches diffused daylight the better it is. The type of artificial light generally employed is too yellow. For most work an adjustment of its color value is desirable and, in some instances, where color judgments are to be made, it is essential.

Distribution.—The distribution of light is an exceedingly important factor, for defective distribution is in all likelihood responsible for a large proportion of ocular fatigue and industrial accidents. The ideal situation occurs when the general level of illumination is high with accessory units used to raise up to an efficient level those particular areas where work requiring fine discrimination is to be performed. Even if the amount of light on a particular working area is sufficient or more than sufficient, unless the surrounding areas such as floors, stairs, hallways, etc., are adequately illuminated, the high local value becomes a risk because the eye of the worker, adapted to the bright light, is for some seconds, even minutes, unable to see danger in a relatively dark area. This is one type of glare effect due to marked inequalities in illumination and is one of the most serious of the common defects. If this change in looking from a bright to a dark field occurs but four times an hour, it has been estimated that in a factory using 100 men, each working by an unshaded droplight, there has occurred 3,200 times on each eight-hour shift a condition which is capable of producing an accident.

Unsteadiness.—Unsteadiness of illumination is mainly provocative of fatigue due to the incessant demands upon the eye for readjustment. Cloud or smoke shadows may cause rapid and annoying alterations in light values near windows and the rapid flicker of defective current is extremely tiring.

Diffusion.—Diffusion is related to distribution and shares its importance. Diffused light does not cast sharp, dense shadows which are a prolific cause of the tripping accidents ranked by the insurance companies as first among the industrial hazards. The factor of diffusion has been emphasized not only from the industrial accident, but also from the purely public health point of view. It has been characterized as an important quality of light used to avoid rapid fatigue and the production of eyestrain and Lancaster has indicated a rough test for this quality: a pencil or finger held

several inches from the paper, book, or work to be viewed, should not and will not cast a sharp shadow if the light is properly diffused.

Direction of Light.—Finally, the direction of the light under some conditions may become important. The old tradition that the light should come over the left shoulder is as erroneous as it is misleading. The frequency with which every principle of good lighting is broken and the violation justified by the innocent assertion that the light comes over the left shoulder is surprising. The direction of the light becomes important and sometimes dangerous only under two conditions: (1) When the specular or direct reflection from the work or nearby bright objects is directed into the eye; and (2), when the bright or concentrated source lies in the field of vision, and the effect and danger in this second instance increases rapidly as the line of light approaches the line of sight. Both of these conditions produce glare. If glare is eliminated and the light is properly diffused its direction is unimportant. A possible exception may be made to light coming from below.

The Eyes in Preventing Accidents

The second factor involved in the seeing process is the eye. It is obvious that any amount of perfection in illumination cannot benefit a blind eye, but to this statement we may not attach the corollary that the more perfect the eye the greater will be the benefit it derives from improved illumination. It is because functional and organic defects in eyesight are so very common that they cannot be avoided in industry, and because the defective eye receives proportionately greater benefit from good lighting than does the perfect eye, that I have emphasized the need of attacking this phase of the problem.

We can quickly outline those defects of the eye which result in poor vision and indicate how they may cause accidents but, so far as I am aware, no valid correlation between the individual ocular conditions and accident-rate has ever been reported. These facts are extremely difficult to acquire for a number of reasons, one of which, a psychological factor, has been repeatedly brought to my attention. The man with an organic defect is usually more cautious in situations where that defect is likely to be made manifest, whereas the consciously perfect specimen permits his pride to lead him to

the fall. We all recognize the prominent rôle carelessness plays in accidents. This does not mean that I minimize the importance of ocular defects—to do so would be to compound the carelessness. Rather, I merely want to indicate the difficulties involved in accurately placing the blame for an accident where only functional eye defects can be demonstrated.

Incidence of Defective Vision

Defective vision is a common condition in all stages of life. The Washington Public Health Survey showed 34 per cent of 4,000 school children had defective vision when the examination was made without a cycloplegic, and the number was increased to 59 per cent when a cycloplegic was used. Schereschewsky found that 75 per cent of garment workers had some defect of vision. The United States Public Health post office survey gave intermediate figures which also confirmed the increase of defective vision with age.

Refractive Errors.—What are the refractive errors and how do they affect vision? They may be classified, for our discussion, as: myopia, or nearsightedness; hypermetropia, or farsightedness; astigmatism, complete lack of a focal point due to differences in curvature of the focussing parts of the eye; and presbyopia, or old sight which lacks adequate focussing power. Combinations of these conditions are the rule. Certainly no nearsighted person should be permitted to drive a truck or control a situation where a wide range of clear vision is essential for the safety of himself and others unless he is wearing correcting lenses and, if our safety program is to eliminate as far as possible the necessity for full co-operation, we should find in our organization a place where his visual range may function without increasing the hazards to himself and others. Similarly, the farsighted person should either be placed on a job with minimal requirements for prolonged close application or should be relieved of the strain of such work by suitable lenses. Only a careful testing, not alone of the visual acuity, but also of the amount and range of focussing power and the refractive condition of the eye, will give the information necessary to plan most intelligently for these people.

Muscle Imbalance.—A second group of eye defects frequently associated with the refractive errors and a prolific cause of eyestrain and possibly accidents are the muscular imbalances. They have been found to be the cause of many airplane accidents, especially during flights at high altitudes. I do not think any of us will find much difficulty in visualizing the dangerous predicament occasioned by double vision where a reaction to one image must of necessity be quick and accurate. A test for this condition is simple and should be part of every safety program examination.

Organic Eye Diseases.—A third group of defects includes the organic eye diseases. These act in such a variety of ways (such as aversion of light, distortion of images, tearing, sudden blurring, flashes of light, black spots, etc.) to create situations potentially dangerous that they cannot be considered here. It is neither kind nor safe to permit a man with active ocular disease to jeopardize the safety of himself and those about him by attempting to perform work which requires accurate visual supervision. A single example of such disease may be permitted. Glaucoma, a very serious and progressive eye disease leading usually to blindness unless treated, may show no evidences of its presence by the usual cursory eye tests. The patient may read the test chart perfectly and exhibit quite normal focussing power for his age. His eye may show no external signs of disease and yet he is in tremendous danger himself and may constantly be endangering others. The clue may come from some awkwardness which indicates that he does not see well out of the corner of his eye, and then careful tests will reveal that his fields of vision are greatly restricted. Such a man does not see danger approaching from the side and may suddenly precipitate himself or others into tragic situations as a consequence. What has been said of him applies frequently and in a similar way to persons suffering from certain retinal and optic nerve diseases. Fortunately, they are relatively rare compared with refractive errors and muscular imbalances.

Summary

In summarizing, the following points may be made regarding illumination and defective vision in relation to accidents in industry:

1. Defective illumination is a common and expensive cause of defective eyesight and accidents.

2. The major lighting defects may easily be recognized and in most cases eradicated.

3. The eradication of defective illumination is usually not only practically possible but economically profitable.

4. The best available statistics indicate that about 40 per cent of our industrial workers have defective vision due to ocular defects.

5. This number is probably being increased by unhygienic lighting conditions; and poor illumination augments the ocular deficiencies already present.

6. Refractive errors cause potentially dangerous situations by producing fatigue, reducing physical efficiency, and failing to give adequate warning of danger while there is yet time to avoid it.

7. Muscle imbalances lower the worker's resistance to fatigue and disturb his quick and accurate spatial perceptions which are essential to safe behavior among moving objects.

8. Organic diseases not only reduce vision, both central and peripheral, but by causing distortions, blind spots, illusions, etc., handicap the worker's control of his physical activities.

Recommendations as to Illumination

How can the safety engineer, the employer, the production manager, the industrial physician or nurse be useful in improving lighting conditions?

It has repeatedly been demonstrated that light is cheap compared with labor costs. Some illuminating engineers associated with electrical companies claim it costs less than nothing. Ignoring any statement which appears radical and accepting only the conservative opinion of the Illuminating Engineering Society and American Standards Association, a detailed estimate conservatively based on practical conditions demonstrates that if an operator, because of good illumination, saves—in more production, better quality of product or decreased accidents—the equivalent of only three minutes per day for 300 days, he will offset the annual cost of the illumination.

The obvious application of this information would be to request an illumination survey of the plant or factory by an illuminating

engineer in conference with the plant physician or ophthalmologist. If this is found impractical, or sufficient co-operation cannot be obtained, then any observer with a lively interest, armed only with a copy of the American Standards Code of Lighting, a cheap foot-candle meter, and a reasonable amount of intelligence, can make a survey that may be of incalculable value in reducing accidents, conserving vision and life, and increasing production.

In such a survey the foot-candle meter will indicate the intensity of the light, which may be compared with the values recommended by the American Standards Association for the type of work involved. The quality of light may be roughly judged by the eye—most electric lamps are too yellow, especially in low wattage. The distribution of light is of extreme importance as glare and its evil consequences depend upon this factor. A rough classification of glare and its recognition and measurement are given in the American Standards Code of Lighting. A direct observation on steadiness will frequently reveal an unrecognized but disturbing or fatiguing flicker, or marked and sudden variations due to a daylight component in positions near uncurtained windows. Its diffusion may be tested by a very simple and practical method and, if the other defects are eliminated, its direction is a matter of little importance.

Recommendations as to Correcting Eye Defects

Indubitably, a complete pre-employment and periodic medical examination would serve to lessen the dangers and accident-incidence due to defective vision—especially if these examinations included the services of specialists, particularly ophthalmologists, psychiatrists and illuminating engineers—but such a program is much too Utopian to be included in any practical discussion at the present time.

On the other hand, it is a foolish, expensive and shortsighted policy to do nothing because the ideal facilities for accomplishing our objective are not at hand. The conditions met in industry are so infinite in variety and specific limitation that I can only urge each one interested in promoting safety to do the best he can with the equipment and abilities at his disposal. If the services of an ophthalmologist are not available, then the combination of industrial physician and optometrist may be found satisfactory or, lack-

ing these, a nurse trained in eye work can be of great value if the limits of her training and responsibilities are understood. Lacking any professional assistance whatever, our intelligent, enthusiastic friend who made the illumination survey, can, with a little help which any physician will be glad to supply, carry out some tests which may prove of great value if for no other reason than that they defeat the spirit of indifference and callousness which is to such a great extent responsible for our industrial health and accident bills.

First, to this enthusiast, I would suggest acquiring a copy of the National Society for the Prevention of Blindness Publication No. 77 on "Eye Protection in Industry," which supplies a self-appraisal blank. Next, some visual test cards for both distance and near vision. The technique of using these can soon be acquired. Color tests are easily made with the Ishihara charts, which are the nearest approach to automatic diagnosis I have seen in medicine. A rough confrontation test for loss of side vision is not difficult to apply and, while woefully inadequate, is better than no test at all if reliance is placed only on positive findings. Finally, by noting whether a red glass placed over one eye produces double vision as the eyes follow a small light moved into various positions, and by alternately shifting a cover from one eye to the other as a distant object is viewed and noting whether the covered eye deviates inward, outward, up or down, some of the gross muscle imbalances will be discovered. Every suspicious or positive case should, of course, be referred for expert attention either to a physician or a clinic.

If only these few tests are carried out, I believe they will represent progress and, as they are carried out, their value and the value of the person who performs them will be more and more appreciated.

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Eye Injuries and Sympathetic Ophthalmia*

Bernard Samuels, M.D.

NO one has been able to isolate the micro-organism that causes sympathetic ophthalmia, although it is a specific disease which may be recognized under the microscope. A challenge to pathologists!

THE subject on which we are to speak especially concerns sympathetic ophthalmia, a disease that occurs often after injury to the eyeball. It is a very peculiar malady which, first breaking out in an eye after a perforating wound, causes a similar disease in the uninjured eye. There is nothing else in pathology similar to this. For instance, if there is a boil on one hand, that does not cause a boil on the other hand; but after a perforation in one eye, it may happen that the uninjured eye becomes inflamed.

Sympathetic ophthalmia occurs only when an eyeball is perforated. Practically nothing else will cause it. Perforations usually take place in the cornea, and mostly in an antero-posterior direction. It is fortunate that the majority of perforations are in the cornea, because this area is not so dangerous for the production of sympathetic ophthalmia as when the "white of the eye," namely, the zone around the cornea overlying the delicate vascular structure called the ciliary body, is perforated. This white circumcorneal area is called "the danger zone" of the eye, because it is following perforations in this area that sympathetic ophthalmia is most likely to develop.

Childhood is unfortunately a favorite age for perforations of the globe. Every mother should know the old saying that for children, knives, forks and scissors are not good. Then we skip from

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early childhood to manhood. Those who do manual labor, particularly structural steel workers, are exposed to accidents of all kinds to the eye. Eye accidents occur seldom in women and very seldom in old people, all of whom lead more protected lives.

Some perforations are complicated by the presence of a foreign body in the globe. Until thirty years ago very tiny foreign bodies in the eye could not be readily discovered, and there was very little known about them. Then came the day of the X-ray. When it became generally known that there was this marvelous light that enabled one to see a foreign body in the globe, and not only to see the foreign body but to localize the exact spot of the foreign body, there was a great outpouring of all those cases that hitherto had been suspected of having foreign bodies in the eye. They came to have the presence or absence of a foreign body confirmed.

If a foreign body has been retained in an eye for any length of time, it becomes encapsulated by newly formed connective tissue. It makes for itself a bed in which to lie, and then it is impossible to extract it by any method without destroying the organ. It is necessary that every foreign body be removed at the earliest possible moment. If the foreign body is in the eye a few weeks or a few months, and it proves impossible to remove, we understand that it has become embedded.

When a foreign body is introduced into the globe, micro-organisms may be introduced with it. The destruction of the eye comes in this case, not from the damage done by the foreign body, but from the effect of the micro-organisms. There is no better culture media anywhere than the vitreous body that comprises four-fifths of the interior of the eye. Fortunately, a spicule of steel is not likely to be infected because it is heated by the blow of the hammer and so it may enter the eye sterile.

Sometimes it is rather a merciful thing that pus is introduced through the perforating wound because the pus destroys the whole of the interior of the eye, and those eyes in which the entire interior is destroyed do not produce sympathetic ophthalmia.

In observing people who have a shrunken eyeball after perforations, doctors should cultivate the habit of asking how long it has been since the wound occurred. It must be remembered that sympathetic ophthalmia may occur twenty, thirty, or forty years

or more after an injury, although it is likely to break out within a month after the accident. Children are more prone to it than adults.

There are two great classes of intraocular foreign bodies. One type is of organic origin, such as an eyelash or a bit of wood. The other type represents inorganic substances such as steel and copper. These latter are the two chief foreign bodies with which we have to deal. When a foreign body perforates an eye, it is driven with such force that it goes straight through the wall and does not cling to anything. It may even perforate the fibrous tunic of the eye twice, lodging in the orbital tissues back of the eyeball. Its salts are so irritating that they may quickly destroy the eye, just as virulent bacteria do.

A piece of steel the size of the point of a cambric needle can cast a shadow with the X-ray and can be accurately localized. Whenever a visiting nurse suspects the presence of a foreign body, she should advise that the patient be sent to a hospital for an X-ray. Minute foreign bodies go directly through the fibrous coat of the eye like a needle, painlessly. If they stay in the eye a few weeks it often is too late to extract them, and degenerative changes will go on until the sight is lost.

Whenever a piece of steel enters the eye, it does just exactly what it would do if it were wrapped in linen and placed in water. It would stain the linen a rusty brown. Within the interior of the eye a bit of steel sets up immediately a staining process. The staining involves first the tissues around the steel. This direct impregnation of the tissues with the salts of the iron is known as direct siderosis. Later the salts diffuse in all directions so that most of the structures inside the eyeball take on a brownish color. To a blue iris this gives a brownish hue, while it causes a normally brown iris to assume a dull, dirty brown color. In the old days before the time of the X-ray and localization, the color of the iris was all that surgeons had to go by. One should train himself to observe whether both eyes of an individual are of the same color. If one is brown and the other blue and the individual states that both eyes were once brown, it is likely that the blue eye is the weaker eye, disease having made the iris fade out. But if both eyes were once blue, and one has turned brown, this should cause a suspicion that in the brown eye there is a particle of steel dissolving.

Not all of the tissues within the eye become impregnated with the salts of iron. It is mostly structures of epithelial origin that show this affinity. The lens is such a tissue. By dilating the pupil one may see a brownish ring in the lens, representing epithelial cells have taken up the salt of the iron. After the removal of steel the stain may gradually disappear. Eyes containing irritating foreign bodies are very liable to set up sympathizing ophthalmia.

It is unfortunate that we cannot make the diagnosis of sympathetic ophthalmia until the uninjured eye is affected. Therefore, all of us should have in mind that sympathetic ophthalmia is a disease not of one eye but always of both eyes. The disease is an entity—separate and apart from all other diseases. The pathology of sympathetic ophthalmia was first differentiated about forty years ago. In a given case one has to decide what damage was done by bacteria, if infection is present, and, finally, the damage done by the irritating effect of a foreign body, if any is there. Sympathetic ophthalmia is something that is added to that which an ordinary injury would produce. It represents a peculiar infiltration of lymphocytes into the choroid, ciliary body and iris and not an exudation of cells, as is seen in the formation of pus.

Sympathetic ophthalmia is a specific disease. It may be recognized under the microscope. The only weakness in the picture is that nobody yet has been able to isolate the micro-organism that causes it. The disease itself, so far as we can see it microscopically, looks almost exactly like tuberculosis. It is thought that it may be caused by some micro-organism similar to the tubercle bacillus, introduced into the wound. The question disturbs the pathological world today.

In the matter of advising the removal of an eye that has suffered from a perforation in the region of the ciliary body, the surgeon is guided by the following rule: If the vision is failing; if the eye is soft; if it is painful; and if the wound is retracted—then removal is indicated. One cannot say that such an eye will produce sympathetic ophthalmia, but it may. Unfortunately, there is no way of diagnosing the onset of sympathetic ophthalmia until the uninjured eye is already inflamed. Then but little can be done. The uninjured, sympathizing eye may in the end be blind while the injured eye may retain some slight vision.

Conserving Vision—An Integral Function of the Missouri Commission for the Blind

Francia Baird Crocker, R.N.

MISSOURI has long been known as a "Show You" state in matters pertaining to welfare work for the blind or research and education toward prevention of blindness. This article is one of a series which we are publishing, describing the conservation of vision programs in various states

SHOULD organizations doing work for the blind participate in active measures to prevent blindness?

In the office of the Missouri Commission for the Blind are records of over 6,600 persons who are industrially blind, and the Commission is concerned with the social adjustment of the adults of this group. To make social plans for these adults the Commission establishes an eye diagnosis to determine if visual impairment is to be temporary or permanent. As a result of the work with this large number of persons, attention has been focused on eye affections which can be treated and blindness prevented. The Commission has a definite responsibility in regard to individuals needing eye care; either it refers them to an agency charged with the duty of conservation of vision and prevention of blindness, or, in the absence of such an organization, the Commission must take active measures to restore vision before making extensive plans for social rehabilitation. This is not contrary to, or a startling departure from, the programs of other fields of social work based on sound principles, which attempt to assume their part of the community or state responsibility, not only in ameliorating social situations, but in preventing them from arising in so far as it is possible to do so.

The Missouri Commission for the Blind was created in 1915 by Act of the General Assembly. At the outset, the members realized

the urgency of stressing a program to prevent blindness, but the limited funds at the disposal of the Commission during its first ten years of existence greatly restricted the development of this work. Sporadic efforts were made as funds permitted, but it was not until January, 1929, that a separate department was established within the Commission for this purpose.

Aside from humanitarian reasons for conserving vision and preventing blindness, there is an economic factor of eclipsing proportions to be considered, namely, the cost of administration and disbursement of the state pension for the blind which amounts to more than $1,000,000 annually, as more than half of the 6,600 blind persons in Missouri receive the state pension for the blind. Accepting the statement made by authorities that two-thirds of all blindness can be prevented if taken in time, approximately $720,000 of the annual expenditure of more than $1,000,000 a year in state pensions is being paid to persons who need never have become blind.

Relation of the Department for Prevention of Blindness to Other Departments of the Commission

In addition to the department for prevention of blindness, there are five other departments in the Commission: home teaching, pension, home work, placement, and shops and sales. There are nine home teachers and a supervisor, all of whom are blind, in the home teaching department. These representatives visit the adult blind men and women in their homes, instruct them in simple handicrafts and in reading and writing raised types, and help them in many ways to become adjusted to their visual handicap. The pension department is responsible for investigating applications for the pension and certifying those applicants who are eligible to the auditor of the state. The home work department gives employment to blind men and women in their homes and finds a market for the finished products. The placement department secures employment for blind men and women in industries and independent enterprises, while the shops and sales department has charge of the St. Louis Broom Shop and acts in an advisory and supervisory capacity to the other five shops in the state. The department for prevention of blindness has a duty to fulfill in relation to each of these departments.

Home Teaching Department

Accepting blindness without investigation as to the cause or the possibility of improving vision and teaching individuals braille or handicrafts not only wastes the teachers' time and deprives other blind persons of instruction, but also has a deleterious effect upon the individual who goes through a period of personal readjustment in order to compensate for a visual handicap which might have been removed.

The department for prevention of blindness renders its greatest service to the home teaching department in securing and interpreting diagnoses and in estimating the visual efficiency of the individuals coming to the attention of the home teachers. The home teachers must know if the individual is to be considered as one who comes within their services from the standpoint of vision; what is the social significance of the diagnosis; is the condition progressive or infectious; is treatment indicated, and if so what will be the probable outcome? The service the home teacher renders may be limited or modified by the eye findings. On the other hand the medical evidence may hasten social planning.

Pension Department

Applicants for the blind pension are examined by one of the examining staff, which is composed of fifty-nine ophthalmologists, all of whom hold the certificate of the American Board for Ophthalmic Examinations. The amount of vision, diagnosis, cause of blindness, and recommendations for treatment are given on the eye affidavit. Written into the pension law is the following clause: "No person shall be entitled to the benefits of this act who shall refuse to submit to treatment or operation to effect a cure when recommended by the examining oculist and approved by the Commission; but upon submission to such treatment or operation, the pension of applicant, otherwise entitled thereto, shall be paid as in other cases." Each month applicants, for whom treatment has been recommended, are referred by the pension department to the department for prevention of blindness.

An example of what failure to treat applicants for the pension may mean in dollars and cents is the case of a man sixty-four years of age who was placed on the pension roll and received $1,800 from

the blind pension fund. A cataract operation for this man cost $18 at one of the operative clinics held by the department for prevention of blindness. His vision was restored and he was removed from the pension roll. What he had been paid for being blind would have provided eye care for forty-five patients at a cost of $40 per person, or this same amount would have been sufficient to pay the salary of another worker in the department for prevention of blindness for one year!

Home Work—Placement—Shops

The chief contribution of the department for prevention of blindness in relation to these departments is in securing and interpreting eye diagnoses and visual efficiency in order to place responsibility, from the standpoint of vision, among the various agencies working with the visually handicapped.

Co-operation with the Missouri School for the Blind

During field trips and at diagnostic eye clinics held throughout the state, blind and visually handicapped children are located who should be in school and are not known to the Missouri School for the Blind. Another service is rendered indirectly in helping to screen out partially sighted children who do not belong in a school for the blind, yet cannot get along profitably in the regular grade without sight-saving tools.

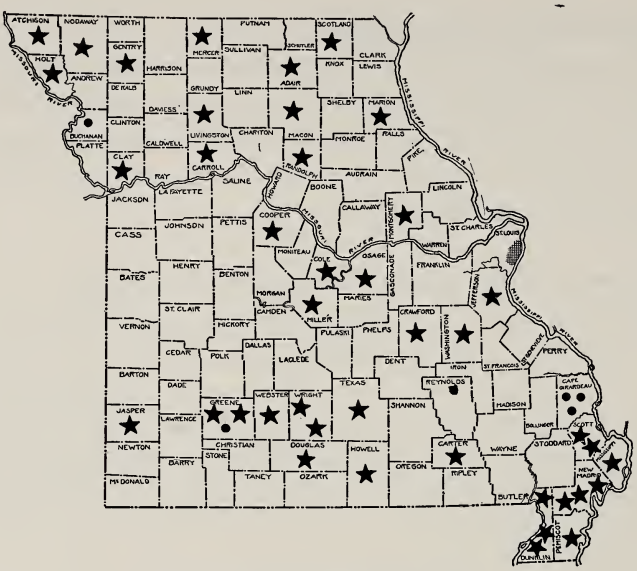
State-wide Participation and Motivation

The department for prevention of blindness has extended its activities beyond the co-operative relationship with the other departments in the Commission and has adopted a twofold program, remedial and educational in scope, involving either actual local participation throughout the state to prevent blindness and conserve sight, or acting as the motivating agency to promote greater efforts by existing groups.

Floating Eye Clinics

With few exceptions, the ophthalmologists in Missouri are grouped in St. Louis and Kansas City, and it follows that there are

large areas, sometimes including several counties, where there are no ophthalmologists, making it difficult for persons to secure examination and treatment. The floating clinics have been one means of making it possible for persons in need of eye care to be examined, and interesting results have been produced. Since January, 1929, forty-one of these clinics have been held throughout the state and over 3,900 persons examined, making an average attendance of 95 persons at each clinic.



EYE CLINICS IN MISSOURI
Stars—Diagnostic Clinics Circles—Operative Clinics

The clinics are always sponsored by one or more local organizations, and the following groups have promoted clinics: County Medical Societies, Parent-Teacher Associations, American Legion, Lions Clubs, Business and Professional Women's Clubs, Commercial Clubs, Rotary Clubs; and county officials—superintendents of schools, probate judges, health officers, and county nurses.

Pre-clinic publicity is directed by the groups sponsoring the clinic, jointly with the department for prevention of blindness, which furnishes the press releases. Notices of the clinic are sent to

each school teacher in the county, and to teachers in surrounding counties if another clinic is not contemplated soon in that section of the state.

The medical staff of the department for prevention of blindness consists of a medical director, associate medical director, and staff of fifty-seven ophthalmologists, no one of whom receives any compensation for his services. The medical director or associate medical director has charge of the clinics and is assisted by other members of the examining staff. The nurses in the department for prevention of blindness do the vision testing, secure history of the eye condition, and, after the person has been examined by the ophthalmologist, explain to him the result of the examination and recommendations for eye care. Social histories are taken and those persons unable to secure treatment are followed up later and arrangements made with local organizations for their care. In some cases a joint responsibility is assumed and in others the department for prevention of blindness may take the entire responsibility. The social plans which are made, obviously are modified to meet the local situations. The following conclusions have been reached in regard to floating clinics:

1. They provide competent eye examinations for persons living in districts far from an ophthalmologist.
2. Through the follow-up work after a clinic persons are treated who otherwise would not be cared for.
3. They are infinitely valuable from an educational standpoint, for they:
    a. Acquaint individuals with causes of blindness.
    b. Focus attention on the need of preventing blindness.

Medical Social Service

Realizing that while much has been accomplished in prevention of eye defects and resulting blindness, Utopia in this respect is still "fancy's child," one of the tasks at hand is to secure care for persons who are suffering from eye difficulties and are unable financially to secure competent medical care. Since the organization of the department for prevention of blindness, 436 persons have been treated. A serviceable plan has been worked out with the hospitals and clinics throughout the state. Reports of treatment are secured from the ophthalmologist who treats the patient and, as only in-

digent persons are cared for by the department for prevention of blindness, the physician gives his time without remuneration. Recommendations for future treatment are noted and follow-up memoranda maintained so that the patients will return for subsequent care and the value of treatment will not be lost.

The social service department of Washington University Clinics and Allied Hospitals has two full-time social workers in the eye clinic, and a plan has been worked out with the head worker in regard to patients coming to St. Louis for treatment. The head social worker on the eye service is notified by the department for prevention of blindness when a patient is to be admitted to the hospital and is given a report showing medical-social data pertinent to the patient's personal plan. While the patient is in the hospital he is visited by the social worker who keeps in touch with the department for prevention of blindness, notifies the department of his progress and the time for his discharge from the hospital, and sends a final report of treatment and recommendations for future care.

The department for prevention of blindness is responsible from this point on to see that recommendations are followed out and that the patient returns for care at the stated time. This applies only to patients living outside St. Louis, as the department for prevention of blindness does not work with patients in St. Louis, since there are other organizations to care for them.

If patients who live outside St. Louis report to the eye clinic and are unable to secure care for themselves, the social worker refers these persons to the department for prevention of blindness for follow-up, and if they are admitted to the hospital later by the department for prevention of blindness, the social worker keeps in touch with them as outlined above.

It is well to mention how the service may be reversed, the social worker in the eye clinic carrying the major responsibility and the Missouri Commission for the Blind acting in a specialized capacity. Individuals reporting to the clinic for regular care may be industrially blind and need employment or instruction in simple handicrafts and reading and writing raised types. The social worker plans with the representative of the Commission who supplies the specialized service for the rehabilitation of the patient.

Benefits accruing from such a plan are manifold:

1. The patient, who is the first consideration, is under sympathetic guidance from the time he is admitted to the hospital until treatment is completed, because the social worker and the worker in the department for prevention of blindness are planning together in the interest of the patient to remove obstacles which might prevent the full carrying out of treatment.
2. Less "shopping" is done by patients and valuable time saved, which in some cases may mean preventing loss of sight.
3. Social planning, either from standpoint of worker in the department for prevention of blindness or the medical-social worker in the eye clinic, is more efficient because of this reciprocal relationship.

Eye Surveys and Demonstrations of Vision Testing

One city and three county-wide surveys have been made of the vision of school children. In two counties the surveys stimulated the interest of the local groups and hastened the employment of county nurses. Enough children were located in the city-wide survey to bring to the attention of the Board of Education the need of a sight-saving class. In one county, of 1,158 children selected for examination by the school teachers, 135 were recommended for further examination by an ophthalmologist.

Since 1931 twenty-nine demonstrations of vision tests have been given. At the request of the Board of Education in a city with a population of 57,527, the department for prevention of blindness demonstrated vision testing to all the teachers in the school system, and vision testing was incorporated in the teacher's health education program. A demonstration of vision testing was given to the nurses taking the public health course at Washington University, as well as other nursing groups. The technique for vision testing advocated by the National Society for the Prevention of Blindness is followed, with the exception that the Snellen E chart is used for children of all ages and also for adults who are tested at the diagnostic clinics.

It is difficult to measure the results of this work, but in addition to getting early correction of visual defects, a number of children

are being located who should be in sight-saving classes or have the benefit of sight-saving tools. Over 200 have been found and the eye condition established. At the present time the department for prevention of blindness arranges examinations for these children, interprets the eye condition to the teacher and suggests sight-saving tools which can be secured at a small cost. The department for prevention of blindness feels that even more time should be given to vision testing demonstrations, especially in regard to the pre-school group.

Impetus was given to this work by the National Society for the Prevention of Blindness when the director of nursing activities was loaned to the Commission, before a department for prevention of blindness was established, and vision testing was demonstrated at the State Teachers Colleges at Warrenton, Maryville, Cape Girardeau, and Springfield; and the State Nurses Meeting in Springfield.

Research

Little more than a beginning has been made in the field of research. Diagnoses of all patients examined are tabulated each year. Cross-files are kept on all cases of congenital blindness and glaucoma.

Educational Program

The future effectiveness of the department for prevention of blindness is largely dependent on its educational program. In addition to what has been already outlined, speakers have been provided for talks before Parent-Teacher Associations and county teachers' meetings. During the Missouri Conference for Social Work in 1931, the department for prevention of blindness prepared a program on the contributions of various social agencies in prevention of blindness. Again in 1932, a luncheon meeting during the Missouri Conference for Social Work was given over to a program on sight conservation. Exhibits on prevention of blindness were placed at the State Fair, the State Nurses Meeting, the National Dairy Show, and in connection with the Week for the Blind.

A bulletin, *Out of Darkness with Proper Eye Care*, is published each month and sent to nurses, social workers, and various civic organizations. The following topics have been contributed by ophthalmologists on the staff:

Glaucoma, by Dr. Meyer Wiener.
Optic Atrophy in Missouri, by Dr. John Green.
Strabismus, A Curable Defect, by Dr. B. Y. Alvis.
Visually Handicapped Child, by Dr. H. D. Lamb.
Semi-Sighted Children in Public Schools, by Dr. W. L. Post.
Cataract, by Dr. Lawrence T. Post.
Eye Accidents, Prevention and Treatment, Dr. Roy E. Mason.
Spectacles, Their Use and Abuse, by Dr. M. H. Post.

Summary

The department for prevention of blindness has a duty to fulfill in relation to the other departments in the Missouri Commission for the Blind. It also has a distinct function to perform in carrying on a remedial and educational program throughout the state, either through local participation or acting as the motivating agency. As long as there are over 6,000 blind persons in Missouri and as many more potentially blind persons, these activities are necessary.

The public has become aware of the prevention and control of tuberculosis, diphtheria, and other diseases and it is necessary for the same enthusiasm to be stimulated in this field if vision is to be conserved and blindness prevented.

Preventing Ophthalmia Neonatorum in Virginia—An Administrative Problem

By W. A. Plecker, M.D.

NO important disease is more easily, surely, and inexpensively prevented in the vast majority of cases than ophthalmia neonatorum, says Dr. Plecker. The state bureau which has supervision of midwives aids greatly in this preventive program

NO DISEASE that is not often fatal is more productive of harm to the individual and of regret to the state than ophthalmia neonatorum, an infectious disease of the eyes of the newly born. No disease is more easily and surely prevented in the vast majority of cases than is this one by the simple instillation in each eye immediately after birth of a one per cent solution of nitrate of silver. A solution of this strength has been found as effective as the original two per cent solution advocated by Credé, and does not produce the reaction which frequently followed the stronger solution. In my experience as state registrar, in charge of the Bureau of Vital Statistics of Virginia which has the administration of the law for the prevention of blindness, I have found that no disease of equal importance can be as thoroughly and as inexpensively prevented.

The most virulent type of the disease, which usually appears at about three days after birth, is due to infection of the infant's eyes during birth by gonococci from the vaginal discharges of the mother. For the sake of preventing family discord and humiliation to the mother, the fact should be emphasized that only about two-thirds of the cases of opthalmia neonatorum are of gonorrheal origin. Other forms may be due to pneumococcus, streptococcus, staphylococcus, diplobacillus, and colon bacillus. These produce inflammation of a milder type and do not usually appear until

from five to seven days after birth, though it is possible for the infant to escape the primary infection from the vaginal canal through the use of the nitrate of silver and receive secondary infection by transmission of the mother's discharge by carelessness on the part of the nurse or the mother herself. The physician should determine the responsible infection by laboratory examination of the eye discharge.

Damage is produced by allowing the discharge to remain in contact with the surface of the eye; therefore, no disease demands more imperatively the most thorough and painstaking nursing that can be procured, which is, of course, in a hospital. The essential in treatment is the removal of the pus by gentle irrigation at half-hour intervals. If only one eye is involved, care should be used to protect the other from the pus, and from the irrigating fluid.

In the case reports which are called for by the Health Department and followed up closely by correspondence from our bureau, I am amazed at the inadequate treatment which a large percentage of the rural cases receive, and still further amazed that as many recover as do without serious damage. The supposition is that the cases are chiefly of non-gonorrheal origin. In one case, however, of a negro child, that was well advanced before a physician was called, the patient was so overwhelmed by the violence of the infection that death resulted, for the state probably a fortunate occurrence.

Of the cases that we have been able to follow up, nearly all occurred in the practice of negro midwives, who either did not use the eye drops or did it in an ineffective manner. One thought that the proper method was to rub the wax ampule containing the solution over the ball of the eye; another thought that the wax should be melted in a pan and rubbed on the eye, whether inside or outside the lids our informant did not say. Such cases of extreme ignorance are, of course, rare. Most of those who cannot read the instructions accompanying the ampules have learned by observing physicians and from the lectures of the midwife supervisor.

The midwives of Virginia are legally under the supervision of the state registrar, whose rule is never to write a private or an annual circular letter to them without closing with the admonition that no midwife is permitted to make an internal examination with her finger, and that every midwife is required to use the eye drops in

the eyes of the baby within five or ten minutes after birth, and to report the birth to the local registrar within ten days. I wish here to emphasize the second of these injunctions, as it is not generally realized even by physicians that an essential in using the prophylactic is to do it promptly. My instruction to the midwives is to do it before washing and dressing the baby, while it is suggested to the physicians that when the head is delivered and the body is delayed, they may even wipe around the eyes and use the drops while waiting for pains to recur and deliver the body. A delay of an hour or even of half an hour may be disastrous.

A word now as to the solution: I find that there is a tendency on the part of a number of physicians to use the various proprietary preparations of silver, upon the plea that they are as effective as the nitrate and less irritating. It is essential that these solutions be freshly made, a point which busy physicians are apt to neglect. Then, too, the proof that they are, even when fresh, as satisfactory as the nitrate of silver solution is not convincing. The clinching argument, however, is that if they have a mishap following the use of any preparation other than that recommended and furnished by the State Health Department, they have no adequate defense in case of a suit for damages, and cannot shift the responsibility back to the state.

Our bureau has systematically set aside dated samples of various lots of ampules, which we have several times had tested by the state chemist to determine the degree of deterioration. The solution keeps best in wax and poorest in clear bottles, especially when removed from the obstetrical satchel and exposed to the light. In wax little deterioration has been found after one year, with a loss of only about ten per cent in strength after two years. To avoid, therefore, furnishing physicians and midwives with more than a year's supply, monthly check sheets are kept by the clerk in charge of this work, showing the exact number of births reported monthly and yearly by each of the two thousand or more physicians and 4,300 midwives of the state. When they request ampules, their records are examined and a supply is sent for from six to twelve months only.

If a midwife asks for ampules in number greatly in excess of the births reported, we ask her why she is not reporting all of the births

for which she is using the ampules. On the other hand, if she asks for too few ampules, we are equally solicitous to learn why she is not using eye drops with all of her cases. Inquiry is tactfully made of physicians at times when the two records vary greatly, the suggestion usually being in the form of a reminder that it is safest to use the state preparation.

By this close supervision we believe that the ampules are well distributed and used.

A further check is the modification of the Virginia birth certificate, in which the questions are asked:

1. Did you use the eye drops?.....
2. If not, why?.....

As to the results: It is difficult for us to determine with any great degree of accuracy, but in 1929 Dr. Frank M. Hanger, ophthalmologist for the State School for the Deaf and Blind at Staunton, Virginia, wrote as follows:

"I have carefully gone over records at the Virginia School for the Deaf and Blind, and find that only two children have entered the school since the Taylor Law went into effect, on June 17, 1918, who were made blind as the result of ophthalmia neonatorum, and both of these were born prior to that date; consequently they had no prophylactic drops put in their eyes at birth.

"The Taylor Law has been in force for eleven years, and, thus far, has a clean bill of health. No child can enter the school until it is six years old, and not one has entered during the past five years. This record is indeed pleasing to those of us who are especially interested in this humane measure—an index to the efficiency of all those who are supposed to obey the law, as well as those whose duty it is to see that the law is properly enforced."

Dr. Hanger says further that he had seen but one case of ophthalmia neonatorum during the past ten years. By reference to the birth certificate for this child he refers to, we find that there was neither physician nor midwife in attendance at the birth and that the drops were not used. He reports also that during the thirteen years preceding the passage of the Taylor Law, twenty-four children blind from ophthalmia neonatorum were admitted to the Staunton school. This would indicate that there are now in Virginia twenty-two children at least, born during those eleven years, who can

see because of this law—who would otherwise have been doomed to lives of blindness.

The total appropriation for the administration of this law is $2,300, reduced from $2,500, which pays the salary of the clerk and the cost of postage, boxes, wrappers, and ampules, the latter being made in the laboratory of the State Health Department. The amount would not be sufficient, however, if the ampules were purchased of manufacturers.

I wish to suggest that no branch of health work is so well prepared for administering this law as is the Bureau of Vital Statistics, provided, of course, that the management is interested in preventive medicine, as well as in statistics, and makes use of the facilities available in the regular process of handling the birth certificates to advantage.

Editorials

Something to Think About

"THE National Society for the Prevention of Blindness doesn't surprise us, particularly, when it announces that 50,000 American school children today are handicapped by poor eyes; but when the announcement is made that only 4,000 of these are being given special attention, the figures should give everyone a shock of dismay and a realization that something should be done about it.

"The child troubled by defective vision is struggling under a terrific handicap, at the best. He may be called stupid, when his brain and ambitions are just as good as those of his fellows. But he cannot keep up to the others because he doesn't see as well as they.

"Perhaps the teacher sets down some figures on the blackboard. The average pupil will get the answer to the problem quickly; but not the boy or girl whose eyes are bad. When he or she is called upon for the solution, it isn't ready—because that child is still trying to make out the blurred figures. And the others, like as not, snicker at what they unknowingly call 'dumbness.'

"And there's another tragic feature in connection with this matter—the fact that the handicapped child, when he does awake to the realization he cannot see well enough, often does not mention this to his parents or teachers. He may even fear he's going blind, but the same kind of misunderstood, childish fear prevents his revealing what he thinks.

"Surely, this is a serious situation. The fourteen states now conducting special instruction and attention for youngsters with poor eyes are doing a splendid thing. But what about the other thirty-four?

"The matter certainly warrants serious consideration from all of them."

—*Tribune Republican*, Meadville, Pa.

Fourth of July Eye Accidents

As the day for celebrating the birthday of the nation approaches, it is of timely interest to consider the fruits of the slogan, "A Safe and Sane Fourth of July." Taking those figures which are of most interest to the National Society for the Prevention of Blindness, we find that from 1900 to 1916, in response to intensive safety campaigns, there was a great and steady decrease in the number of eyes lost because of Fourth of July activities. Although figures beyond 1916 are not available, we may assume that the decrease in eye accidents from Fourth of July celebrations has continued. Yet, in 1931, seventeen children lost the sight of one eye, and 141 children had accidents involving the eyes, because of the traditional celebration of this holiday. The Safe and Sane Fourth is still an ideal far short of attainment.

An increasing number of communities, both local and state, are prohibiting the sale of firecrackers and toy explosives. Safety organizations in other communities are agitating for the ban on firecrackers and allied dangers and are making headway in educating public opinion. Yet these agencies cannot prevent accidents among children whose parents are willing to have them take a chance. No other child is safe in a community where such danger still exists. The ultimate responsibility for the prevention of these accidents lies with the parent, as an individual and as a member of the community.

Now is the time for every mother and father to plan with their neighbors a celebration of Independence Day with a new tradition: an accident-less Fourth of July.

Note and Comment

Gun Seller Must Pay for Loss of Boy's Eye.—The law in New York City which prohibits the sale of air rifles to minors showed its teeth recently when the court awarded $12,500 to a thirteen-year-old boy whose eye was hit and destroyed in an air-rifle battle. The shopkeeper who sold the gun must pay heavily for his violation of the city ordinance. The court's decision comes as a timely warning, for closely allied to this ordinance is the prohibition of sale of fireworks and firecrackers to children under age. But, in the effort to prevent accidents of this type from occurring, the education must go beyond the seller and maker of such hazards to the parents, with whom the primary responsibility for enforcement of such prohibitions must rest. Ordinary living itself presents sufficient hazards to life, limb and senses, without inviting special and totally unnecessary risks in the form of guns and firecrackers.

Sight-Saving Class Training to Be Offered During the Summer Session of 1932.—Four universities and colleges are offering summer courses of training in co-operation with the National Society for the Prevention of Blindness. They are given in the order of the date of the opening of the session.

University of Cincinnati, Cincinnati, Ohio.—June 18–July 26, 1932. Registration June 18.

Teachers College, Columbia University, New York.—July 5–August 12, 1932. Registration must be made in person June 30, July 1 or 2.

State Teachers College, Buffalo, New York.—July 5–August 12, 1932. Registration July 5 and 6.

University College, University of Chicago, Chicago, Illinois.—June 27–August 5, 1932. Registration June 21 to June 25.

Ophthalmia Neonatorum Prize Paper.—The Robert Johnston Essay Prize, awarded under the auspices of the St. Louis Society for the Blind, was presented this year to Dr. Sidney A. Fox for his

paper on "The Methods for the Prevention of Ophthalmia Neonatorum; and Their Practical Value." This paper, tracing the history of ophthalmia neonatorum from its earliest recognition by Scranus, a Greek physician who lived during the second century A.D., to its treatment by Credé and the subsequent discoveries of its causal agents, stresses a fact which should be emphasized among the lay public—that ophthalmia neonatorum is caused in only one-third of the cases by the gonococcus. The knowledge that this eye disease, which has caused so much blindness in the past and continues to blind many whose sight might be easily saved, bears no moral stigma, will encourage the father and mother of every newborn baby to demand the protection of prophylactic treatment for their child.

Springfield, Massachusetts, Eliminates Eye Menace.—Needle-pointed, feathered darts, weapons of death among certain primitive tribes, have no place in the play of Springfield's children, according to that city's safety council manager; his activities have resulted in the enactment of a city ordinance prohibiting the sale of these dangerous toys which have recently caused several serious accidents among school children. Teachers, playground supervisors, police and parents are asked to co-operate in eliminating such unnecessary hazards from children's play.

The Family Doctor and the Squinting Child.—"Any squinting child has been neglected and probably irreparable damage has been done if he is allowed to arrive at school age without every effort having been made to ascertain and correct the cause of the squint," is the opinion of Dr. Frank P. Smart, in the *Virginia Medical Monthly*. The ability to learn fusion and acquire binocular vision is lost after the first six years of life, and any later correction will be outward only, without improving vision. It is the duty of the family physician to acquaint the parents of the squinting child with these facts and to see that the child comes early under medical care.

Pediatricians and Oculists.—In an editorial in the *American Journal of Ophthalmology*, Dr. Morie F. Weymann suggests a practical step in conserving the sight of children. He says, "As

many children today are under the care of pediatricians from infancy to above school age, and report to them periodically, there is no reason why, if the pediatrician is supplied with the proper charts, he cannot test the child's visual acuity at the age of four years or less. . . . Routine testing of school children's vision has prevented much ocular disability by the early discovery of ocular defects, but, with the co-operation of pediatricians, we can and should go one step further by detecting the more gross errors in children of the preschool age."

The belief that vision testing is an intrinsic part of the routine health examination of the preschool child has long been held by the National Society for the Prevention of Blindness. To facilitate the testing, a simple chart and testing game have been devised; these have been successfully used with children as young as three years of age. From a recent survey of centers where the materials and technique of vision testing have been demonstrated over a period of five years—public health groups, school nurses, parent-teacher preschool round-ups, preschool and kindergarten groups—it has been found that preschool vision tests have been incorporated in the health check-ups of some 1,300 groups.

The Ideal Book.—"What is the ideal book?" asks Edward K. Robinson in a recent issue of the *Publisher's Weekly*. He finds that it must be of a comfortable and convenient size to hold; its pages must be well proportioned to hold a type that is easily readable; for most books, twelve-point type (about the size of the type used in the SIGHT-SAVING REVIEW), with a four-inch line, will be most comfortable to read; spacing between lines must be unobtrusive, wide enough to avoid confusion, close enough to keep the text together. He recommends unglazed opaque paper, and the use of dark gray, rather than black, ink. Most of these points would be endorsed by those seeking to conserve sight, as well as by those whose considerations are more aesthetic.

Industrial Eye Injuries.—The recent rapid growth of industrial activity in the South has brought industrial eye injuries to the attention of Southern physicians in increasing numbers, according to an article by Dr. James B. Stanford in the April issue of the *New Orleans Medical and Surgical Journal*. Outlining briefly the

procedures for immediate treatment for eye injuries, he finds that ten per cent of blindness may be traced to industrial accidents, and that proper lighting and safety devices in mills and work shops would prevent at least half of the eye injuries.

Eye Defects in Childhood.—Dr. E. W. Kennedy, medical adviser of sight conservation, Department of Special Education in Rochester, N. Y., writing for the *School Physicians' Bulletin*, (April, 1932), points out that while ideally every school child should have the benefits of a thorough ophthalmic examination, where school medical systems fall short of this ideal, eye defects may be discovered through routine vision tests, examination for superficial physical signs, and the teacher's observation of reading habits, concentration and work attitude. While remedial efforts are vital, preventive measures are doubly so; prevention is largely a matter of education, extending backward to the parents before marriage, and throughout the growth of the child from prenatal life through school days. He concludes: "Glasses should not be looked upon as the sole solution, but prescribed only in connection with the study of the child's entire physical and mental status."

Home Lighting.—At the Home Lighting Institute, held at the headquarters of the Electrical Association of New York, lighting engineers pointed out that, despite the great progess in lighting during the past twenty years—the increased efficiency of light bulbs, the better design of light sources, and the scientific demonstrations of the relation between light and sight—illumination in the usual home is still only a little better than it was in the past. The effects of poor illumination tell upon every member of the family, and particularly upon the children. That proper lighting will improve seeing and eliminate eye fatigue, that it is an important measure of home safety and a large factor in the decorative scheme of the home, are axioms which must be emphasized to the home-maker.

Those mentors of the American standard of living, the women's magazines, are doing their share to make the American housewife light conscious. Some of the more recent articles that have appeared include:

"Lighting Makes Its Contribution." *Delineator*, January, 1932. A plan of lighting arrangements for a specific living room shows the value of light for eye comfort and for effective decoration.

"Good and Bad Lighting." *Ladies' Home Journal*, February, 1932. The same room, lighted properly and improperly; good lighting eliminates glare and harsh shadows and directs light where needed.

"The Well Lighted Home." *Parents' Magazine*, February, 1932. Conservation of sight, like charity, begins at home. Directions for insuring eye comfort and decorative beauty, as well as convenience, in lighting the home.

"Lights! Lights!" *Pictorial Review*, February, 1932. The three rules of home lighting are: (1) shade every light to avoid glare; (2) use enough light and avoid gloom; (3) provide light where it is needed.

"Light, Its Use and Abuse." *American Home*, May, 1932. Pictorial demonstrations of the wise use of light in various parts of the house.

Another point of particular note to home-makers, stressed in "Taking Care of Things," an article which appeared in the January, 1932, issue of the *Woman's Home Companion*, is the need to dust and clean light bulbs and light sources. The dust of two or three months may lower the output of light from a bulb by nearly 35 per cent.

Trachoma in Missouri.—From 1923 to 1930, a study of trachoma, its incidence, its effect upon sight, and its prevention, has been under way in Missouri. The assembled material, published in the April 15 issue of the *Public Health Reports*, is discussed by Dr. C. E. Rice and Dr. J. E. Smith. It has been found that in the southern section of Missouri, where the incidence of trachoma is greatest, the rate is almost 20 cases per 1,000, of whom one out of 26 is blind. Furthermore, of those not blind, one-eighth of the cases showed sufficient corneal involvement to reduce vision to 20/200 or worse. With the estimate of 17,000 active and inactive cases of trachoma in Missouri at the present time, the social and economic value of a wide program of treatment through clinics and hospitals and prevention through education is realized.

Silver Nitrate Used in California.—During March, the California Department of Public Health reports, nearly 1,400 outfits, consisting of two wax ampules containing a one-per-cent solution of silver nitrate, were distributed to physicians and midwives to be instilled in the eyes of newborn infants. These outfits are distributed free to physicians and midwives to encourage their use, although the state has no law demanding prophylaxis of the eyes of the newborn.

Poor Eyesight, A Problem in Mental Hygiene.—Unstable emotions and school failures may reflect an unsuspected visual defect, says Rose S. Hardwick, psychologist at the New England Home for Little Wanderers and at the Habit Clinics of the Massachusetts Division of Mental Hygiene, in an article in the April issue of *Understanding the Child*. Citing cases of children with school difficulties, she finds that the problem of adjustment was solved after correction of the eye defects. She concludes that (1) in all doubtful cases vision should be tested by competent specialists; (2) in every case it is of prime importance to create a favorable atmosphere for the child; (3) that the teacher is in a position to give first aid to these youngsters, and it is her patience, tact and resourcefulness which give effect to remedial treatment.

Another Cause of Reading Difficulty.—Although it is conceded that muscle balance and refractive errors most frequently cause reading difficulties, a recently recognized physiological disturbance —undetermined dominance of the brain hemispheres—may be the cause of poor reading and writing. An article by Mrs. Gladys E. Hosmer in the March *Hygeia* tells the story of a child, intelligent, adjusted and normal-sighted, who was unable to read. The discovery of his handicap led to training which recognized and accepted his confusion of images; reading, however, will always remain a process of mental translation of the image he sees to the one generally accepted.

Ophthalmology at Law.—Dr. Sydney Walker of Chicago defines briefly in the *American Journal of Ophthalmology*, for March, the legal phases of industrial ophthalmology. Discussing some of the specific problems encountered by the testifying ophthalmologist,

he emphasizes the need for accuracy and completeness of records, the differentiation between results of injury and pre-existing conditions, and the importance, to both the employee and the employer, of simple and direct testimony.

Prohibition on Fireworks Upheld in Maryland.—Rallying to the defense of the Maryland statute which prohibits the sale of fireworks, the Maryland Society for the Prevention of Blindness, with the co-operation of the Public School Association, the League of Women Voters, the Civic League, the Safety Council, the Fire Board and the Police Department, showed why any amendment to the present statute would be dangerous. The most moving of the arguments was the mute and pitiful testimony of a three-year-old girl who was severely burned last Fourth of July by the so-called harmless sparkler. The full prohibition of the sale of fireworks will be maintained in Maryland.

Prompt Treatment Needed in Ophthalmia Neonatorum.—Because an unusually large number of cases of ophthalmia neonatorum have been reported to the New York State Commission for the Blind, the Commission reiterates the need for immediate care of all cases of babies' sore eyes. Prompt hospitalization of the child, maintenance of breast feeding, isolation until two smears are negative for gonorrhea, and prompt notification of all cases, whatever their origin, are of prime importance in saving sight from this devastating disease.

The Commission reminds physicians and health officers that lack of funds is no reason for delay of treatment, since the establishment of the Commission's revolving fund finances the immediate care of ophthalmia neonatorum cases pending the obtaining of local funds.

Contact Glasses.—Although contact glasses were invented over two hundred years ago, it has been only within the past ten years that the difficulties of fitting, making and wearing them could be overcome. In spite of their great success in some cases, says Dr. H. C. Neblett, in *Southern Medicine and Surgery* for April, 1932, their use is still confined to a relatively narrow field. Their high cost, their fragility, and the difficulty that many people experience

in wearing them, will necessarily restrict their use at present and for some time in the future to actors and others who, needing glasses, do not wish to mar their appearance.

Looking Backward in Ophthalmology.—Because ophthalmology, as a specific branch of medicine, is comparatively young, many of its greatest figures are still green in memory. In "Reminiscences of Forty Years in Ophthalmology," published in the *Pennsylvania Medical Journal* for April, Dr. William C. Posey discusses informally the contributions and characteristics of some of the great eye surgeons of yesterday. The presentation is such as to make layman and scientist alike share Dr. Posey's enthusiasm for these men and for their share in saving sight.

Glasgow Clinics Study Visual Acuity.—From records of visual acuity, taken before and after correction in the Glasgow clinics for correction of defective eyesight, it has been noted that, before correction, 36 per cent of the group had good or fair visual acuity; after correction, this percentage rose to 85 per cent with good or fair vision, while the 63 per cent with bad vision before correction fell to 15 per cent after glasses had been supplied. The educational value of supplying 85 per cent of a class with good eyesight cannot be overestimated.

Sight-Saving Classes in New York State.—A publication of interest to teachers, superintendents and educators is the April 15 issue of the *University of the State of New York Bulletin*, which is devoted to a description of sight-saving classes in New York State. Miss Matie M. Carter, state supervisor of sight-saving classes, has combined a general outline of the work and aims of all sight-saving classes with the specific details of the requirements of the State of New York. Because of its clarity, simplicity and forcefulness, this booklet should be valuable propaganda among educational and lay groups.

Preventing Ophthalmia Neonatorum—A Constitutional Infringement?—An editorial in the March, 1932, issue of the *Illinois Law Review* examines the facts regarding the ophthalmia neonatorum bill which failed to become a law in Illinois last summer, because of its alleged unconstitutionality. The writers, Kenneth C. Sears

and Arthur H. Kent, find that the measure is conducive to human well-being; that the procedure recommended is endorsed by various reliable health authorities; that its enforcement in other states has prevented blindness and saved large sums of money. Reviewing decisions of the Supreme Court of the United States on similar measures, the writers conclude: "If the state may penalize the failure to inject a vaccine virus into the blood stream of a human being; if the state may prevent by penalty the marriage of epileptics; if the state over objection may cause to be performed an operation upon a female which involves cutting through the abdominal wall in order to prevent procreation by a feeble-minded person, then it seems to approach the ridiculous to hold that a state, within the constitutional concept of liberty, cannot prevent a loss of vision by dropping into the eyes of an infant within an hour after birth a solution which at most will cause only a temporary irritation."

Daylight in Offices.—How much daylight is needed in offices? In England, according to the Illumination Research Bulletin No. 12, a study, undertaken by E. K. Taylor to determine the amount of natural daylight needed in offices for the visual requirements of workers, defines the "no sky line," a point in the interior from which the sky cannot be seen, as the point beyond which visual work is not possible. One foot-candle of illumination, not less than 2/1000's of the complete illumination of a horizontal surface under an unobstructed sky, is the minimum daylight illumination for an office. This investigation corroborates the finding that light-colored walls and ceiling tend to increase the illumination values.

More Sight-Saving Classes Needed in New York.—In his annual report, Dr. William J. O'Shea, superintendent of schools in New York City, says that while the sight-saving classes now established in New York have made a marked contribution in providing opportunities for handicapped children, there is not a sufficient number of these classes to which an increasing number of oculists are recommending children. He also urges the establishment of treatment centers for children having inflammatory conditions, when the parents cannot afford the care of a physician.

International Prevention of Blindness Report.—The report of the annual meeting of the board of governors of the International Association for Prevention of Blindness, published originally in French, has recently been released in English translation. Of particular interest are the report of the president, Prof. de Lapersonne, of the year's progress, and the papers, "Present Legislation and Protective Measures Against Eye Hazards in Industry," by Dr. Coutela; "The Value of a Complete Investigation of the Causes of Blindness as a First Step in Prevention," by Dr. Cridland; and "Cataract in Fresh Water Fish as a Result of Parasitic Invasion of the Crystalline Lens," by Dr. Park Lewis. Copies of the report may be obtained from the National Society for the Prevention of Blindness, at 450 Seventh Avenue, New York, N. Y., or from the International Association for Prevention of Blindness, 66, Boulevard St. Michel, Paris, France.

Certification of the Blind in Scotland.—A shifting of the statistical duties in the registration of the blind from a central bureau to local authorities has been made in Scotland. Latest reports show an increase in blind persons over fifty years of age, with a slight decrease in the number of blind children. The law, which demands an ophthalmic certification of blind persons, has a direct bearing upon the prevention of blindness, since experience has shown that many who have been considered blind are so through lack of medical care. Recommendations for operations or for medical treatment have led to the restoration of sight of many applicants for certification.

Accidents Chief Cause of Blindness in Wisconsin.—Industrial hazards and accidents to children at play are now the chief causes of blindness in Wisconsin, according to a note in the *United States Daily* by Dr. G. W. Henika, assistant health officer of Wisconsin. Blindness from ophthalmia neonatorum has been practically eliminated in the twenty years of enforcement of the prophylactic law. Prevention of industrial accidents and forethought in supervising children's play should further reduce the toll of eye accidents.

Miguel de Mérida Nicolich.—Word has been received of the untimely death of Dr. Mérida Nicolich, director of the Institute for

the Blind at Málaga and an indefatigable worker for the blind in Spain. It was the privilege of the staff members of the National Society for the Prevention of Blindness to learn to know Dr. Nicolich and to hear of his work, during his attendance at the World Conference on Work for the Blind.

National Society Notes.—The widest audience ever to be reached at one time by the National Society for the Prevention of Blindness listened to a brief talk on sight conservation when Mr. Lewis H. Carris, managing director, spoke during the *Literary Digest* radio program directed by Lowell Thomas. This was arranged following the publication of a full-page story on the need for sight-saving classes, which appeared in the *Literary Digest* of April 9. As a result, a number of inquiries on the various aspects of sight conservation have already reached the National Society.

The wide interest in sight conservation has been amply demonstrated by the reception given Mrs. Winifred Hathaway, associate director of the National Society, on her visit to the Hawaiian Islands; during her six-week stay there, she spoke before sixty-one meetings, including parent-teacher associations, teachers' meetings, women's clubs, classes at the University of Hawaii and high school students. Demonstrations of vision testing for all school groups, school lighting surveys and individual conferences pointed the way to a constructive program of sight conservation in the Territory. A similarly enthusiastic welcome marked Mrs. Hathaway's stop-overs along the West Coast on her eastward journey. She visited San Francisco, Portland, Seattle, Tacoma, and, later, Denver and Omaha, in the interests of sight-saving classes located in those cities.

Because facilities for the special training of medical social workers in eye clinics will be increased this year, Miss Eleanor P. Brown, secretary of the National Society, has been visiting medical centers and university hospitals in eight states and the District of Columbia, to determine the number of qualified applicants for the coming term.

On the invitation of public health officials of six states, Miss Mary Emma Smith, R.N., director of nursing activities of the National Society for the Prevention of Blindness, addressed 25 groups

of nurses, parent-teacher associations, teachers and others interested in the conservation of vision, on the practical value and simple method of testing the vision of the preschool child. Miss Smith visited centers in West Virginia, Maryland, Tennessee, Arkansas, Texas and New Mexico; during her stay in San Antonio, Texas, she demonstrated preschool vision testing at the Biennial Nursing Convention.

The National Conference of Social Work, held in Philadelphia, Pa., May 15 to 21, was attended by several staff members of the National Society. Mr. Lewis H. Carris contributed to a symposium on "How Best to Unite Forces for the Handicapped." At the joint luncheon meeting of the American Association of Hospital Social Workers and the National Society for the Prevention of Blindness, Miss Eleanor P. Brown spoke on "The Eye Clinic Social Worker and the Community." Others participating in the Conference were: Miss Mary Emma Smith; Miss Alice M. Bradford, membership secretary; and Mr. David Resnick, director of publicity. Throughout the Conference, the National Society maintained consultation service and an exhibit in the main hall.

"Bright Eyes for May Day," by Miss Isobel Janowich, editor of the National Society, was the first of a series of radio talks given at the invitation of the New York Tuberculosis and Health Association. The subsequent talks, all occurring during May, were: "Eyesight in Summer," by Mrs. Dorothy Crane Vaughan, staff assistant; "Bright Eyes for School," by Miss Mary Emma Smith, R.N.; "Sight-Saving in the Home," by Mr. David Resnick; and "Eye Hazards in Play," by Miss C. Edith Kerby, statistician.

Current Articles of Interest

Detachment of the Retina and Its Surgical Therapy, Leo L. Mayer, M.D., *Archives of Ophthalmology*, April, 1932, published monthly by the American Medical Association, Chicago, Ill. From a study of artificial detachment of the retina, it was noted that methods which do not cause destruction of the tissue such as is found in cautery, but at the same time produce an exudate that seals the retina to the choroid, would seem to be those of preference.

Management of Heterophoria, C. D. Townes, M.D., *Kentucky Medical Journal*, January, 1932, published monthly by the Kentucky State Medical Association, Lexington, Ky. In treating cases of heterophoria, detailed study and routine muscle tests should be made, without and with proposed correction. Detection of the abnormal muscle usually results in cure without operation.

The General Significance of Visual Tests, Edward Jackson, M.D., *Canadian Medical Association Journal*, April, 1932, published monthly by the Canadian Medical Association, Montreal, Canada. Tracing the development and scope of visual tests—for acuity, for field, and for color—the writer finds that vision reflects and affects bodily conditions as a whole; its relationship to general health must make it of significance to the general practitioner and to the medical specialist in fields other than ophthalmology.

The Problem of Late Afternoon Lighting, C. E. Ferree and G. Rand, *Archives of Ophthalmology*, April, 1932, published monthly by the American Medical Association, Chicago, Ill. That illumination for late afternoon is poor because of the mixture of natural and artificial light has been disproved. The writers find, however, that greater intensity of artificial light must be used to supplement failing afternoon daylight, to bridge the period between the high illumination of noon and the full use of artificial light. When carefully corrected for color and composition, artificial light may be so utilized as to make the change unnoticeable.

Ocular Onchocercosis, Rafael Silva, M.D., *Southern Medical Journal*, February, 1932, published monthly by the Southern Medical Association, Birmingham, Ala. Describing the parasite of ocular onchocercosis, a recently recognized eye disease, the author tells the history of the efforts to combat this cause of certain blindness. Extirpation of cysts does not remove the filariae from the other parts of the body; substitution of plasmochin solution for aqueous humor destroys the parasites in the eye and prevents blindness. The tendency of the parasite to move to illuminated areas and to shun the dark accounts for the fact that it is found in superficial skin areas and in the conjunctiva of the eye. Hope is entertained that these isolated discoveries about the filaria of onchocercosis will lead to general prophylactic measures against it.

An Unusual General Condition with First Symptoms Appearing in the Eye, Charles K. Beck, M.D., *Kentucky Medical Journal*, January, 1932, published monthly by the Kentucky State Medical Association, Lexington, Ky. Report of a case in which a child, eight years old, presented severe headaches and increasing ocular hemorrhage. Treatment for lues was instituted, followed by search for brain tumor; death came after a year's study, and neither the eyeball nor the body gave a clue to the cause of the eye condition or the death.

Workmen's Compensation Problems, V. A. Zimmer, *Archives of Ophthalmology*, March, 1932, published monthly by the American Medical Association, Chicago, Ill. The director of the Division of Workmen's Compensation, Department of Labor, State of New York, interprets to ophthalmologists the importance of careful study and detailed reports in all eye injuries to workmen. The relatively large number of eye accidents and their potential seriousness make the ophthalmic studies in compensation of prime importance to employee, employer and the State.

The Barraquer Operation for the Removal of Senile Cataract, William J. Harrison, M.D., *American Journal of Ophthalmology*, February, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Nine months spent under the instruction of Professor Barraquer of Barcelona, Spain, gives the writer au-

thority for his detailed description of the Barraquer technique for the removal of cataract. He concludes: the Barraquer suction operation is a definite aid to the successful removal of cataract, with the additional advantages of shortened convalescence, total absence of potential inflammatory lens and capsule remains, and good visual acuity.

How to Protect Your Eyesight, *Everybody's Health*, March, 1932, published monthly by the Minnesota Public Health Association, St. Paul, Minn. In the new editorial department, Health Lessons for Schools, eyesight conservation is explained by charts, diagrams and a text which makes clear the physiology of the eye, the common defects of vision, the care of the eyes and the prevention of eye accidents. Suggestions for teachers and references round out this lesson in sight conservation.

Relation Between Ocular Tension and General Blood Pressure, Raúl Arturo Chavira, M.D., *Anales de la Sociedad Mexicana de Oftalmologia y Oto-rino-laringologia*, October-November-December, 1931, published quarterly by the Mexican Society of Ophthalmology and Oto-rhino-laringology, Mexico City, Mexico. After a study of 260 cases, adolescent and adult, with normal and abnormal ocular and arterial tension, the writer finds that there exists no constant and fixed relation between ocular tension (which is often higher in adolescents than in adults), and general blood pressure.

Ways in Which Distance of the Test Field Affects Determinations of Retinal Sensitivity, C. E. Ferree and G. Rand, *Archives of Ophthalmology*, March, 1932, published monthly by the American Medical Association, Chicago, Ill. From studies of intensity of light from varying distances, the authors find that distance is a factor in the determination of retinal responses, and should be given consideration in determination of sensitivity at the center of the field and in work on the perimeter and the tangent screen.

Workshop Lighting, E. L. Oughton, *Industrial Welfare and Personnel Management*, March, 1932, published monthly by the Industrial Welfare Society (Inc.), London. The amount of light needed in the factory is governed by the type of work done, the

type and size of the machines, and the color of the walls and ceilings. For a plant in use both day and night, efficiency demands that the artificial night illumination match that of the natural daylight.

A New Device for Training and Testing Binocular Vision, T. H. Whittington, M.D., *The British Journal of Ophthalmology*, February, 1932, published monthly by the British Journal of Ophthalmology, Ltd., London. The difficulties of treating strabismus by usual fusion-training methods often result in the abandonment of the prescribed exercises. A technique of more interest to the child, and one showing more objective results, involves the use of a wax drawing tablet, adapted to the usual stereoscope for fusion training.

Prognosis of Certain Eye Injuries, Elbert S. Sherman, M.D., *Archives of Ophthalmology*, March, 1932, published monthly by the American Medical Association, Chicago, Ill. The large percentage of eye accidents that are sustained in industry makes necessary an accurate prognosis of future vision. This paper discusses in detail the probable outcome of penetrating wounds of the eye caused by flying particles.

Trachoma, Charles S. Alexander, M.D., *Texas State Journal of Medicine*, April, 1932, published monthly by the State Medical Association of Texas, Fort Worth, Texas. A short article describes the history of the search for the cause of trachoma, its outstanding diagnostic features, and the accepted treatments for this eye disease which may quickly affect a wide population.

Studies in Ocular Fatigue: III, Fatigue of Accommodation, Conrad Berens, M.D., and Elizabeth K. Stark, *American Journal of Ophthalmology*, March, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Although fatigue of accommodation has been recognized since Donders' work in 1864, until recently no objective scientific study was made of it. The ergograph, first adapted to the study of accommodation fatigue by Howe, was improved to provide accurate control of rest periods, rate of approach and recession of the test object, constant illumination, and simplification of the mechanical work of the subject. This improved ergograph is fully described and illustrated.

Book Reviews

ACCIDENTAL INJURIES. Henry H. Kessler, M.D. Philadelphia: Lea and Febiger, 1931. 718 p. Ill.

This work appears to be one carefully planned and admirably executed from the standpoint of the general surgeon. The importance of accidents and injuries has increased with the extension of indemnities to include almost all departments of industry. The contents include a historical review of the subject with a consideration of the duty of the employer, a summary of the various liability laws and their classification, the administration of compensation laws, the rehabilitation of the industrially disabled, occupational diseases, the basis of schedules, and the pathology of trauma with the end results. Injuries involving the extremities, the spine, the thorax and the abdomen are all adequately considered.

Injuries involving the eye, however, are far less satisfactorily treated. About 4 per cent of all injuries involve sight, but this by no means measures their importance because the indemnities paid are much nearer 10 per cent of the whole, and the importance of vision is so preponderating that it always demands the most careful consideration in every case brought up for investigation. On that proportional basis it would be not too much to have devoted at least 70 pages to the consideration of injuries of the eye alone. As a matter of fact, including the bibliography, the whole subject is considered in less than 14 pages. Of this, eye injuries in relation to pre-existing disease, the schedule of awards for eye disabilities and the evaluation which is reviewed of the work of the Committee on Compensation of the American Medical Association, occupy about 12. Another page is taken with a list of conditions that may result from skull injuries alone.

The original paper by Dr. Joseph F. Somberg, constituting Bulletin No. 10, from Bureau of Workmen's Compensation of the State of New York, Department of Labor, is an excellent review of the subject, but the mere list, as taken from it, is inadequate and incomplete without the explanations and discussions that should be in-

cluded. That leaves only a single page for original description of eye injuries which is so inadequate and incomplete as to make it practically of little value either to the general physician or to the specialist. It is a pity that so good a book should not have had the part devoted to the eye either written or revised by a practical ophthalmologist, because no matter how competent or experienced a general surgeon may be, in so distinctive a specialty as that of the eye he can hardly be expected to add material of intrinsic value. The book is well printed on good paper, excellently illustrated and ought to be of great value in the field for which it is designed.

PARK LEWIS, M.D.

SCHOOL NURSING, A Contribution to Health Education. Mary Ella Chayer, R.N. New York: G. P. Putnam's Sons, 1931. 292 p.

Miss Chayer's book itself is a real contribution to health education. To many school administrators, as well as to some nurses, it will offer a new conception of what a properly prepared nurse may do for the health of school children. The discussion of the historical development of school nursing will clarify for those not versed in the history of public health nursing, many of the apparent inconsistencies and contradictions often observed in school nursing services as they are established in various places.

To administrators, no chapter will be found more valuable than the one on the principles of education as applied to the school nurse. To a nurse entering school work this supplies an invaluable point of view and will stimulate her to a much richer program.

All through the book Miss Chayer's emphasis is put on the positive and constructive possibilities in the nurse's school work. Too many people see for her only the patchwork on damages already done, only opportunities to take care of pupils who are suffering from one thing and another, with little or no service to the well children, and with no time or attention for the eradication of the conditions which have produced the difficulties.

The author's plan of development of each special topic seems to be to begin with a discussion of all preventive measures and a placing upon the nurse of a direct responsibility to see that her school gives proper consideration to these factors.

Incorporation of material from such organizations as the Na-

tional Organization for Public Health Nursing, the National Society for the Prevention of Blindness and the National Congress of Parents and Teachers, increases the value of the book for use in courses preparing nurses for school work as it is a most effective indication of the incorporation the nurse should make of such material in her own work.

A consideration of the information and principles presented should secure for school nursing a greater appreciation on the part of nurses planning to enter school work of the necessity for better professional preparation than has often been considered necessary; an appreciation on the part of school authorities of the value of a much greater amount of nursing service than is now demanded in many schools; and a recognition on the part of administrators of general public health programs, of the often overlooked opportunities school nursing work has to offer for the functioning of many parts of the public health program now being attempted through much less effective means.

MARIE SWANSON, R.N.

DISEASES AND INJURIES OF THE EYE. William George Sym, M.D., F.R.C.S.E. Third Edition. London: A. and C. Black, Ltd., 1930. 493 p.

This is the third edition of Doctor Sym's volume for the student and practitioner. As the first edition was published in 1913 the work has survived most of its contemporaries.

Following preliminary chapters on General Examination of the Eye and Refraction, the various anatomical parts, beginning with lids and proceeding to the optic nerve, are discussed in order. Separate chapters are devoted to glaucoma, the ocular muscles, strabismus, the lacrimal apparatus, and orbit, followed by chapters on wounds and injuries and medico-legal questions. Points in general diagnosis, eye symptoms in diseases of other parts and points in nursing conclude the didactic chapters. There follows a discussion of therapeutic agents and a list of requirements for public service. The volume is indexed. Twenty-four full-page illustrations, fifteen of them in color, are supplemented by eighty-eight text figures.

That it has survived for thirteen years indicates its value, al-

though, in common with most volumes of its aim and scope, it is directed between the student and practitioner on the one hand, and the ophthalmologist on the other, and should serve its most useful purpose in aiding the former to understand if not to become the latter. Many of the minutiæ of cataract surgery have no particular place in a volume for the practitioner, and yet a 1930 publication for the ophthalmologist which neglected the more recent advances in this field would hardly be justified.

The book holds interest for the American student of ophthalmology primarily because of the refreshment which comes from a slightly different point of view. It is pleasant to read occasionally something of the historical background which supplies interest in and appreciation of the subject being studied. Doctor Sym has made somewhat more effort to achieve this than most authors of similar sized books.

The discussion of Perimetry is rather discouraging in its technical aspects,—all the more so as it is immediately followed by an appreciation of Bjerrum's contributions to quantitative scotometry. We can hardly be expected to make progress in this important part of functional testing of the eye as long as students are taught casual 10/300 field testing with no further mention of the important external factors which influence their results.

The American student will be helped by the notes on bacteriology, especially of the conjunctiva, with their simple, direct instructions and illustrations. He will miss among the color tests the names of Ishihara and Stillings, both popular in this country. He will be suspicious, and rightly so, of the suggestion that no dressing be applied after a cataract extraction. The logic and practical advantages of this procedure will require demonstration in America by ophthalmologists of considerable standing, and we have few of them willing to undertake the experiment. For his courage, the author has our respect.

Other mild surprises for the reader of American medical literature will be found in the chapters on the choroid and retina. The words *strumous* and *diathesis* are passing out of our writings, although it is by no means certain they will not be recalled. "Diabetic" and "albuminuric" retinitis are treated in the conventional manner. They, too, are passing out of our writings and it is becom-

ing more and more certain they will never be recalled. Surgical treatment of detachment of the retina, a major ophthalmological issue on two continents, receives no support in this volume. Nor does orthoptic training or any of the surgical procedures designed to straighten an eye, except tenotomy or advancement. Cycloplegia and occlusion of the master eye are advocated, as is the wearing of lenses. Worth's amblyoscope is mentioned only to be discarded as valueless. Recession and resection are not mentioned. This will surprise many Americans who have become so thoroughly converted to these procedures and who have, as well, looked to London as the source of most of the orthoptic devices intended to correct muscle imbalances by fusion training.

LE GRAND H. HARDY, M.D.

SPECIAL EDUCATION—THE HANDICAPPED AND THE GIFTED. A Publication of the White House Conference. New York: The Century Company, 1931. 604 p.

In view of the fact that readers of the SIGHT-SAVING REVIEW probably will be most interested in the chapter on The Partially Seeing, the reviewer is limiting her comments particularly to that section of the book. What a feeling of satisfaction the reader of this report gains when he finds that although the titles, The Blind and The Partially Seeing, are grouped together, each one is given a separate place for discussion in the book.

In giving special attention to this chapter, it is evident that an exceptional piece of work has been done. The graphs and various charts give us splendid pictures of this specific problem in the United States. They compare different communities in the development of the work, give us a clear understanding of the distribution of the various eye difficulties and also mention the states making legal provision for establishing and financing special classes. They very definitely show us that, so far, the surface has only been scratched in the establishment of sight-saving classes. Many more of these classes are needed before we can feel that this type of handicapped child is adequately cared for.

The committee did not emphasize too strongly the importance of choosing a properly qualified teacher for a sight-saving class. She should not be picked because there is no other place for her in the

school system, but her educational and personal qualifications should be made the criterion.

Particular care should be taken in placing a child with more than one handicap, so that the greater is receiving the educational benefits. For instance, a child who is definitely subnormal does not belong in a sight-saving class. A lack of intelligence is a greater handicap than an eye difficulty. However, when there is a question about the two, it is best to give the child a trial in a sight-saving class. It has been proven that apparent mental slowness has been due, in large part, to the fact that the child has been unable properly to visualize his surroundings.

Throughout, the report has the merit of completeness. After reading it, school authorities will strongly endorse the need of medical service for all children and the establishment of classes for the education of the handicapped ones. Certainly in a few years, many classes will be established in the rural sections as well as in the cities, thus giving to every child an equal opportunity for preparation for life.

MATIE M. CARTER.

Briefer Comment

THE ELECTRIC LIGHT AND POWER INDUSTRY IN THE UNITED STATES. New York: The National Electric Light Association, 1931. 188 p. Ill.

In a survey of the origin, development, general organization and practical workings of the electric light and power utilities serving the United States, the section on "Lighting" is of particular interest to those concerned with the conservation of vision. Showing the relation between light and sight, this chapter demonstrates how to avoid glare and shadows in lighting, and how lighting may be utilized to the greatest benefit in school, office, industry and the home. A short section is devoted to efficient street lighting. The illustrations are clear and instructive, showing concretely how light is used for maximum efficiency.

SUGGESTIONS FOR THREE COMMUNITY STUDIES. Prepared by the White House Conference on Child Health and Protection. New

York: Office of Public Relations, American Child Health Association, 1931. 42 p.

Summarizing three of the projects of the White House Conference on Child Health and Protection, Public Health Service and Administration, Education and Training, and the Handicapped Child, this pamphlet suggests through outlines, bibliographies and reference agency lists how small communities may develop and bring into being the spirit of the Children's Charter; work sheets and questionnaires make the projects concretely applicable to each community.

Manuscript Writing Lessons, Book III. Stone and Smalley. New York: Charles Scribner's Sons, 1931. 46 p.

The growing interest in manuscript writing, not only among sight-saving class children, but as a more direct co-ordination between the symbols of reading and writing for all children, has encouraged the publication of this third booklet of writing lessons. In its small pages are found suggestions for practice; teachers of sight-saving classes will find it particularly useful.

Report of the Certification of Blindness; and the Ascertainment of the Causes of Blindness. London: The Prevention of Blindness Committee of the Union of Counties Associations for the Blind, 1931. 24 p.

There has arisen in Scotland, England and America a simultaneous realization of the fundamental need of a uniform certification of the blind. In this report by the Committee for the Prevention of Blindness of the Union of Counties Associations for the Blind of England and Wales, the relationship between the prevention of blindness and an accurate knowledge of types of eye defects causing blindness is brought out. The Committee, having reviewed historically the progress of blind certification in England and Wales, urges the adoption of the Glasgow scheme for the certification of blind persons: the examination of all blind persons now on the register by two skilled ophthalmologists whose records shall state the initial eye defect and its cause, the treatment pursued or recommended, and the educational and economic possibilities for the patient. An appendix shows the proposed forms for complete, uniform and reliable information on blindness.

THE ETIOLOGY OF CHRONIC UVEITIS. Proceedings of the Association for Research in Ophthalmology. St. Louis: Ophthalmic Publishing Company, 1931. 93 p. Ill.

Since study of causal factors in a disease is a prerequisite in determining preventive methods, this symposium by eight ophthalmologists, authorities in the field, has a pertinent bearing on prevention of blindness. Following a review of the literature of chronic uveitis, papers discuss the infections of the upper respiratory tract in the etiology of chronic uveitis, elective localization in determining the etiology, considerations underlying the experimental production of the disease, its relation to tuberculosis, endogenous infections in the etiology of chronic iritis, and a study of syphilis as a cause of chronic uveitis. The full discussion following each paper is an added factor in the completeness of the report.

REPORT OF THE COMMITTEE OF INQUIRY INTO PROBLEMS CONNECTED WITH DEFECTIVE VISION IN SCHOOL CHILDREN. Board of Education. London: His Majesty's Stationery Office, 1931. 54 p.

The Committee has sought to "inquire into the factors in childhood leading to the development of squint and defective vision . . . to obtain more exact data than are at present available in regard to unselected children of various ages and to ascertain more precisely what changes occur and of what quality from age to age."

From the nature of the problem, this could be but a preliminary study of the status of vision among school children. The report shows: the rarity of the "normal" eye in childhood; the rarity of myopia in early childhood and its subsequent increase with school age; the large number of cases of hypermetropia among young children and its decrease with the school age. The Committee recommends that a vision test be given routinely to all children and that, ideally, this should be part of a complete ophthalmic examination; that the present vision standards for children be revised to take into account the natural amount of hypermetropia normal to the age, so that a child who now registers emmetropic may be truly recognized as a potential myope; that the tests be given to younger children who have a greater chance for correction than those of the letter-reading age. Further study of these questions is urged for the establishment of a basic scale of vision for childhood.

Sixth Annual Report of the Frontier Nursing Service. Lexington: The Quarterly Bulletin of the Frontier Nursing Service, Summer, 1931. 84 p.

Although the work of the Frontier Nursing Service is of wide scope, offering not only the physical aid of a medical center but the help of friendly advice and social service, many of its activities are part of a prevention of blindness program. Care of expectant mothers prevents the development of syphilis in babies; medical and nursing attention at birth prevent ophthalmia neonatorum; supervision of hygiene, instruction in proper nutrition and actual aid in growing vegetables are valued services toward preventing blindness. More directly, an eye clinic is maintained and the eyes of adults and school children receive any needed corrections.

As a service to rural sections and as a demonstration of possible organization in other sections, the Frontier Nursing Service is receiving merited recognition.

A Bright Book of Lights. Helen Benton Minnich. New York: Frederick A. Stokes Company, 1931. 64 p. Ill.

This small book, tracing with simple text and illustrations the development of light from its original source of sun and fire through the modern lights of city streets, is especially to be commended for its clear print, which makes it good material for the very young reader. Three- and four-year-olds will be charmed with the familiar pictures of lights, including the festive Christmas tree and birthday candles; it is to be regretted that the small format prevents the illustrations from being sufficiently clear for the use of the sight-saving class child.

Contributors to This Issue

As a member of the National Society's committee for training medical social workers, **Dr. Conrad Berens** has been active in increasing social service in eye clinics. Dr. Berens is on the staff of the Manhattan Eye and Ear Infirmary, the Lighthouse Clinic and the eye clinic of the Seamen's Institute, and has seen the good results of active follow-up in eye cases.

Miss C. Edith Kerby is the statistician on the staff of the National Society. The study which she reports was activated by several prominent ophthalmologists in New York City who saw with increasing alarm the numbers of preventable eye accidents occurring in childhood.

Dr. Le Grand H. Hardy, director of eye service at the Fifth Avenue Hospital, is a practicing oculist.

Dr. Bernard Samuels is professor of ophthalmology at the Cornell Medical School, Cornell University, and a practicing oculist.

As supervisor of prevention of blindness of the Missouri Commission for the Blind, **Mrs. Francia Baird Crocker, R.N.,** has seen the development of a prevention of blindness program arising from the social and educational care of the sightless.

Dr. W. A. Plecker is state registrar of vital statistics in Virginia; his program for the enforcement of the laws for ophthalmia neonatorum in that state is fundamentally one which will be applicable to all communities through the departments of vital statistics.

Among the book reviewers: **Dr. Park Lewis,** ophthalmologist in Buffalo and vice-president of the National Society, needs no introduction to readers of the SIGHT-SAVING REVIEW; **Miss Marie Swanson, R.N.,** is state supervisor of school nursing, New York State; **Dr. Hardy** is the author of "Illumination and Eyesight in Industry," in this issue; **Miss Matie M. Carter** is supervisor of sight-saving classes, State Education Department, New York.

Facts and Fallacies Concerning Squint (Cross-Eye)

Luther C. Peter, M.D.

TO correct "cross-eyes" in children, treatment should begin before the sixth year, and preferably before the third

Common Misconceptions Regarding Cross-Eyes

POPULAR belief and prejudice are always barriers to progress. This applies with special force to the unfortunate cross-eyed child, although constructive measures are slowly forcing prejudice and ignorance into the background and are giving "the breaks" to him. Cross-eyes, as the condition is commonly known, is defined medically as "a deviation of one of the eyes from its proper direction so that the visual axes cannot both be directed simultaneously at the same objective point." Other terms which are used interchangeably to describe this condition are "squint" and "strabismus."

The layman is not entirely to blame for his misconceptions as to the cause of cross-eyes. Until recent years, the exact sequence of events which lead up to squint was not thoroughly grasped by the average physician. And perhaps the same lack of unity on the part of medical advisers as to the best method of correcting the deformity may be responsible in part for the popular prejudice against the prescribing of glasses for young children and against operating upon the young child when such procedure is indicated.

To laymen, cross-eyes are the direct result of some sudden fright, shock, strong emotion, convulsions, whooping-cough or some other disease of childhood. Hereditary influences seem to be unimportant to them, or possibly it seems only a coincidence that the mother or father, a brother or sister, was similarly afflicted in early childhood. It is but natural, therefore, that another child

in the same family may become a victim following one of the causes mentioned.

As a matter of fact, there is a logical sequence of events leading up to each case of squint. Most children at birth are farsighted to the same degree as the squinting child. The number of children who become cross-eyed, however, is small as compared with those whose eyes are straight. At birth the child's eyes are not perfectly co-ordinated or capable of working together. After six to eight weeks the eyes begin to work harmoniously. Both eyes will fix upon a bright object or follow mother or nurse about the room. At the end of the first year this habit of parallel vision becomes fairly well established. The eyes are straight.

Fusion

In order to use the two eyes together a faculty or habit, known in medical language as fusion, is awakened. Each eye sees singly but the two images become blended or fused into one. In one of the rarer forms of squint this ability to fuse is totally absent. In such instances, cross-eyes may be present at birth or soon thereafter. If the faculty is not present at birth, it cannot develop, nor can it be trained or cultivated. Either eye may turn in and the child may choose with which eye it will fix. The layman says "both eyes turn in." The physician calls the condition an *alternating squint* because either eye may be used to fix.

In the more common type of squint, a fusing power is present at birth but is weak, as are all other mental faculties. It grows and develops and begins to assert itself six to eight weeks after birth and increases in power up to the seventh year.

If no other defects were present, the growth of fusion would continue uninterruptedly and the eyes would remain straight. Unfortunately, farsightedness of high degree is a second factor which interferes with normal progress. Vision is not sharp because of the far sight. In most instances vision is better in one eye than in the other and the eye with the better sight will habitually fix while the image of the weaker eye is ignored. If the fusion faculty is normally developed, the eyes will remain straight, but when fusion is not strong, the weak eye will tend to turn in. This act causes confusion because double images appear. If the eye turns

to a considerable extent, the child can better ignore the image in the weak eye. Medically, this is known as *suppression*. Suppression means the image is ignored, and as a consequence, from non-use, central vision becomes less and less acute. This adds another factor to the vicious circle. Vision falls rapidly in the eye which turns in and renders the squinting habit easier.

In an untreated case of this character, in which one eye always squints, called in medical language "monocular squint," the vicious circle is: first, far sight; then weak fusion; and later, rapid loss of vision in the cross-eye. Squint or strabismus is now thoroughly established.

Psychological Effect of Cross-Eyes on Child

A final symptom, which has a far-reaching effect on the child, is added. Children of four years become conscious of their deformity. This is forced upon them by taunts from other children. "Cockie," "cockeyed," etc., are epithets which make the child conscious of his handicap. He gradually shuns the contacts of other children, prefers to play alone and loses the influence of comradeship which is natural to the normal child. As he grows older, the defect grows in his consciousness, and an inferiority complex develops which gathers momentum as adolescence approaches. Discriminating parents sometimes sense this change in disposition and eagerly seek the help of the physician. Others seem to fail utterly to recognize the change which develops in the child's mentality and disposition.

As a final step in neglected cases, even though the eyes may eventually be straightened by operation, the results are only cosmetic, i. e., the eyes are straight but vision in the squinting eye remains poor, fusion does not develop and the individual goes through life with one eye, so to speak. Little thought is given to the fact that such individuals are excluded from many useful occupations and vocations in life for which they are otherwise well qualified. This is an economic phase of squint which need not occur if the proper measures are taken at the right time to correct the defect.

Cross-Eyes Can Be Corrected

Those who are interested will naturally ask, what can be done to correct the condition, when should it be done and what can ultimately be accomplished. In the first place, one can reassure parents that all cases of cross-eyes can be corrected but it requires their heartiest co-operation and a willingness to put aside their prejudice and their lay ideas. The matter is entirely a medical one and calls for systematic treatment.

Squint is a condition which develops in childhood, and during that developmental period a cure can be effected in most instances. Unfortunately, in the past, measures to correct this condition were instituted, as a rule, too late to accomplish the results which can now be obtained. In other words, if a perfect cure is to be obtained, all measures leading to its correction must be practised in the formative period of life, i. e., before the patient is seven years of age. Much can be done after this age, but in many instances the cure is only partial. The eyes may be straightened but the squinting eye is almost useless because of the low vision, and the fusion faculty is but feebly operative. The great factor in the cure is the early institution of treatment, in contrast with the popular conception, "to give the child a chance to grow out of his squint." In fact, such measures are responsible for the imperfect cures in the past.

Steps in Treatment

The several steps necessary to bring about perfect results and to place a squinting child on an equal footing with other children are as follows: Testing of vision; fitting of glasses; preventing lowering of vision in weak eye; awakening of the fusion faculty; and finally, when necessary, operation.

As the treatment of the case is a purely technical matter which calls for the highest degree of medical skill, the treatment should be prescribed and outlined by a physician who is specially trained in the treatment of the eyes. The family doctor should first be consulted and he, in turn, can guide the patient into the proper medical channels.

Testing of Vision.—Testing of the eyes for glasses is the first measure which may lead to cure. A high degree of poor vision can and does exist in squinters, a fact which the parents cannot recognize because of the age of the child. Such poor vision can be uncovered and properly measured only by means of "drops," a word which to many laymen possesses a sinister meaning. Most medicines used in the eyes are called "drops," and popular prejudice clouds the situation which primarily is created because the layman cannot and does not know much about medicine. All medicines are harmful when not used in the proper dosage and for the proper purpose. Their right use is a function of the physician, just as the mixing of paint is the prerogative of the trained painter, or the nice adjustment of wood work by one who has been trained in carpentering. Why a layman should hesitate to trust a properly trained physician to know how to use medicines, after years of study and practice, is difficult to understand. One trusts himself and his child to properly trained educators to develop the mental faculties. The analogy can be extended indefinitely, but the same conclusion is reached, namely, prejudice is the basic factor which gives to "drops" the suspicion that they will do harm if they are used.

"Drops" mean atropine when referred to in connection with the fitting of the eyes with glasses in childhood. They will do no harm when properly used, and it is only by the use of drops that anyone can make a true and accurate measurement of the defects of the eyes and the proper glasses can be prescribed.

Fitting of Eyeglasses at Early Age.—If the refractive error is high (i. e., if vision is very poor), glasses should be fitted at the earliest possible moment for a child who squints. Most children will tolerate glasses at the age of fifteen months, notwithstanding the skepticism of many mothers. At this age, glasses accomplish maximum results, and if all squinting children were to be glassed before the end of two years, there would be more cures from squint and fewer operations would be necessary.

Glasses in themselves will not always effect cures. In addition, other measures are often necessary, but at least fifty per cent of cases would not be in need of further treatment if glasses were prescribed and worn before the end of the second year. Furthermore,

if glasses were prescribed at this early age more frequently, when the condition warrants it, poor vision, which as a rule develops in the squinting eye, would occur less frequently.

At this early age and even throughout the school period, tests must be made at frequent intervals. At first, examinations may be required every six months, but later yearly tests may suffice.

Many parents ask, "Can glasses be discarded later in life?" The answer to this common question is: If glasses are helpful in the correction of squint, the refractive error is so high (glasses usually are so strong) that little hope can be extended for discarding them later in life. If the glasses are weak, there is a possibility that they can be laid aside after the active school age. This is the exception rather than the rule.

Preventing Lowering of Vision in Weak Eye.—A third step in treatment is to prevent lowering of vision in the weak eye, or to correct it if it develops before the child comes under the care of the eye physician. In the common form of squint (i. e., when one eye always turns and the other eye fixes) lowered vision is sure to develop unless active measures are instituted to prevent it. It is easy to prevent but difficult to correct unless the treatment is begun early. If proper treatment is practised during the first six years, vision can be restored in practically all cases. If it is not treated before the sixth year, complete restoration of vision becomes increasingly difficult with each year of delay. A few cases recover with treatment after the twelfth year, but they are the exceptions; and varying degrees of defect, with all its handicap, follow the individual through life.

The defect in vision is characteristic, and a properly trained physician can recognize at any time of life that the low vision was due to squint in childhood. The visual loss is largely confined to a small round area, two to three degrees in diameter, in what is known as central or macular vision. Macular vision is the sharp vision in the center of our visual field—the part of our vision which we use in fixing, in analyzing and in reading. If this area is disturbed, reading is impossible. Even minds untrained in medicine, therefore, can understand that such an individual must be excluded from many vocations and occupations in life which call for full vision in both eyes.

Until recent years this loss of vision in the squinting eye was the most discouraging phase of squint. It was thought that little could be done to improve it. Now we can look for cures when treatment is begun before the sixth year, and preferably before the third, if the full co-operation of the parents can be obtained. Our failures in the past were due to the fact that treatment was not instituted early enough and, as a rule, with insufficient care and thoroughness.

The reason for the happy results when treatment is begun early can be readily understood even by the untrained. The child is most receptive, and if training such as this is instituted during the developmental period, it is natural that better results can be obtained. The retina, or receptive part of the eye, is an outgrowth from the brain. It is known that the functional nervous system of the child is not completely formed and developed before the end of the fifth year. Furthermore, experimentally, in treating the child for lowered vision in the squinting eye, we have found it quite easy, in the first six years of life, to transfer the squint and lowered vision to the opposite eye. This cannot be done after the seventh year, showing that the development is completed, or at least that the formative period has passed. It was largely on the basis of this fact which I observed in practice that I have reached the conclusion that the time for treatment is before the seventh year. The results for a number of years past have fully confirmed and justified my belief that all treatment for squint should be completed before the seventh year.

Lowered vision in squint does not mean a congenital defect but a defect which grows out of "non-use." For this reason the medical term applied to it is *amblyopia ex anopsia*—amblyopia from disuse. It is not unlike the placing of an arm in a sling or plaster cast. It becomes weak from non-use but can again be restored by suitable training. In the child, restoration is prompt and complete. In older individuals, and especially when the squint is of long standing, the outlook is less hopeful.

Awakening of Faculty of Fusion.—A fourth measure may be needed in the treatment of squint, namely, the awakening of the faculty known as fusion—the ability to use the two eyes together after they have been straightened. It is normal for the human being

to use his two eyes like two cameras, directed upon the same object but from slightly different angles. Through a mental act, the two images are blended into one. This is single binocular vision. In addition, because the eyes, like binocular cameras, see from slightly different angles, the individual develops a sense of depth, relief and solidity. This is known as stereoscopic vision—the highest degree of vision of which the eyes are capable.

The squinter sees with one eye. In some types of squint a fusion faculty is totally absent. In the more common variety, fusion is present but undeveloped—it is weak. In fact, its weakness permits one eye to wander, and squint becomes fixed. In bringing about cures, therefore, it is necessary to awaken this fusing power. When fusing power is thoroughly aroused by proper training, in many instances, a cure is effected. This part of the treatment is vital but highly technical. Since the reader is interested in results and the means by which they are obtained, details may be omitted.

In the normal child, fusion becomes strong after the first year of life and resists any break in single binocular vision. When it is weak and undeveloped, in the presence of some of the factors previously mentioned, the child gives up the fight against the odds, and squint develops. After glasses are adjusted, and the lowered vision is corrected, training of the fusion faculty may complete the cure. In some instances, however, an operation may be necessary, before fusion can again become strong enough to bring the two eyes into unison. In these cases, fusion training really becomes the final step in the treatment. Fortunately, if all treatment is given before the end of the sixth year, fusion is easily developed and perfect cures are made possible.

Operation for Cross-Eyes.—Operative procedures are necessary in a number of cases. If the squint is not marked, the foregoing methods of treatment usually are sufficient. It is easy to understand, however, why operation may be necessary if the squint is of wide deviation. Changes take place in the weak muscle which is stretched, thinned out and more or less inelastic. Before a cure can be effected, the weak muscle must be shortened to restore its tone. In other instances, the so-called short muscle must also be set farther back on the eyeball. These methods of restoring a

normal balance to the eye muscles bring the eyes into parallelism and the fusion faculty completes the cure.

The operations referred to have been practised for many years, but until recently, they were resorted to too late in childhood, and the other methods of treatment, particularly that of restoring vision, also were begun too late to effect real cures. Operations can restore the eyes to parallelism but they cannot restore vision. The results, therefore, were only cosmetic. The eyes were straightened but the weak eye continued through life as an almost useless member. By operating early, i. e., as soon after the third year as possible, a marked change has taken place in the results. Complete cures can now be expected. The secret of these results lies, first, in the systematic training which has been discussed, and second, in the application of good surgery at a time when natural developmental forces are active, and, therefore, able to aid in restoring the eyes to normal function. It is too late to resort to surgery at ten or twelve years. At such time the eyes can be straightened but the cure is only cosmetic. When surgery is practiced early, before the sixth year, the operations required are less extensive and result in real cures, with full use of both eyes, and with the two eyes working harmoniously as one eye.

Hopeful Prognosis for Cure of Cross-Eyes

This hopeful outlook from the proper treatment of squint has evolved during the last decade. It is no longer a question of straightening the eyes, but one of effecting perfect cures to vision as well, and removing a handicap which has followed many patients throughout life. In this fight against skepticism and prejudice we need the co-operation of the family physician whose good fortune it is to start children into the proper channels for correcting their defects and freeing them from a handicap which will leave a determining effect upon them throughout life. We need the support of social workers, nurses and teachers, who can help to break down the prejudice against glasses and operative procedures, and can help to re-educate parents in the light of the newer conception of squint and its treatment.

Curriculum Problems in Sight-Saving Classes*

Winifred Hathaway

TODAY'S depression slogan—"It's smart to be thrifty"—is perennial with the guardians of eyes who determine sight-saving class curricula

ANY attempt to solve curriculum problems in sight-saving class work must take into consideration the paramount fact that sight-saving class children are of normal mentality. It is not because of their I. Q. but because of their "I See" that special educational opportunities are necessary. Hence there is no basic reason why the children in sight-saving classes should not follow the regular school curriculum, adjusted to their needs, and be kept up to regular grade standards. In fact, there are three pressing reasons why they should do so.

1. There will be found in sight-saving classes pupils of high school and college caliber in the same proportion as will be found in the regular grades. If the school curriculum is not followed and its standards maintained, such pupils find themselves ineligible for high school or college entrance.

2. For a small proportion, at least, of children in sight-saving classes there is hope of improvement in vision. This is particularly true of those suffering either from disease of the eye, or from some systemic disease that affects the eye. Under proper treatment conditions may so improve that the child may return to the regular grade. If he has not been kept up to standard, he is unable to enter the grade for which his mental development fits him and, in consequence, he becomes a discouraged child. For any individual or group, Goethe's lines are pertinent, "He who loses money, loses something; he who loses honor loses much, but he

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who loses courage loses all." For those who are suffering or have suffered from a handicap, courage is even more necessary. Without courage to go forward, all is indeed lost.

3. Here is a group of children of normal mentality; their only handicap is eye difficulty. To offset this handicap they are given individual instruction, educational media suited to their needs, and special attention to their sight. These advantages are offered in order that they may compete fairly with the non-handicapped. Hence it would be quite unfair to them, as well as to the taxpayer, to let them fall below the normal group in their attainments.

Those who are affluent may spend lavishly, but those who have already sustained a loss must spend what is left with the greatest care. In the present financial crisis, there is a familiar slogan, "It's smart to be thrifty." In the sight-saving class there is always a depression in sight values, so that the slogan for this group is perennial. "It's smart to be thrifty," however, can never be interpreted to mean hoarding. Its true significance—wise spending—is of the utmost importance to sight-saving class pupils. The teacher who is trained to understand the possibilities as well as the limitations of eye difficulties will be able to interpret what wise spending of sight means for each pupil in her class.

The purpose of any educational curriculum must be the same for all groups—"To make school life meaningful; to provide opportunities for social participation and personal responsibilities; to find and release resources and creative possibilities." It is evident that curriculum problems for sight-saving classes are concerned with adjustment rather than with the building of a new curriculum. The teacher's aim is so to adjust the regular school curriculum that her pupils will get the greatest benefit, with the least possible eye use.

The Use of the Senses in Learning

The first step toward attaining this desired result is to divide subjects into groups, those requiring close use of the eyes, and those in which the other senses may be used, either in place of the sense of sight or supplementing it to a considerable degree. Certain subjects of the curriculum naturally fall into the first grouping: reading, writing and arithmetic. But even these funda-

mentals of education may be approached from different angles in the normally seeing and in the partially seeing groups. In the former, reading is encouraged not only for informative purposes but for pleasure; in the latter, it must be confined almost wholly to the informational side.

Reading

Those versed in sight-saving class work agree that depriving a child of reading for pleasure is an almost irremediable loss, but a balance must be maintained, and sight is more precious than pleasure. Moreover, in the present day this deprivation is not so great as it seems; modern science comes to the aid of the sight-saving class child. The radio opens up for him much that a comparatively few years ago would have been a closed book. The well trained sight-saving class teacher realizes the necessity for developing concentration and auditory powers, hence a sight-saving class pupil will doubtless benefit more from listening to others read than will the child who is able to read for himself. With the aid of books printed in large, clear type, the sight-saving class child is able to grow sufficiently proficient in reading to permit him to carry on his work and, later, if his sight does improve, he will find himself equipped to enter the field of reading for pleasure.

Writing

Writing, also, requires close use of the eyes, but here again invention has come to aid. The touch system of typewriting offers a medium of written expression that makes communication possible with practically no use of the eyes. If the child is encouraged, just as soon as the mechanics of the machine are mastered, to typewrite his original work—spelling, composition, book reviews, etc.—he is freeing the sight he would have used to prepare these subjects in writing for other purposes for which he must use his eyes. Special typewriters with large type make it possible for the child to correct his own work, wisely spending his sight for short periods. That typewriting represents an economy of sight and of time for all pupils, is being demonstrated by the fact that experimental schools are teaching it even to first grade children.

But for the same reason that he must learn to read, the sight-

saving class child must naturally learn to write. If large letters are used, either on the blackboard with large, soft chalk, or on paper, with large, soft leaded pencils, the work can be accomplished with the smallest outlay of sight, giving the greatest commensurate returns.

Arithmetic

The fundamentals of arithmetic require the reading and writing of numbers and the reading of problems. But here, again, invention has changed the whole aspect of teaching arithmetic. Adding, subtracting, multiplying and dividing may now be accomplished by machine in much less time and with much less incidence of error than when done by human beings. Hence, much of the drudgery of arithmetic drill dealing with large figures that are quite outside of the comprehension of any child, is eliminated. In arithmetic required in everyday experience, the processes are chiefly mental; modern methods of teaching arithmetic emphasize the necessity for practical work and thus curtail, for all children, much needless use of the eyes. This is a boon to the sight-saving class child who may, without undue expenditure of sight, keep up with his normally seeing companions.

History, Geography, Science

Social studies, history, geography, science, fall within the second group since they may be taught largely through the auditory sense. If this method is emphasized for sight-saving class children they may spend their sight wisely for the study of specially prepared maps, not only large enough for them to see clearly, but without the thousands of details that even educators of normally seeing children are coming to realize are confusing and useless.

But this is not enough; for sight-saving class children, in particular, the old Persian saying must be borne in mind: "If you have two pence, with one buy bread to feed the body, and with the other a white hyacinth to feed the soul." There is no reason why sight-saving class children should be deprived of the white hyacinths of the school curriculum. In creative motor activities, the sight-saving class child may readily participate, provided that the economy program for sight is borne in mind and that those

activities are selected which will give the greatest return for the least outlay. Drawing and sewing cannot, naturally, be included in this category, but substitutions may easily be made. Free hand paper cutting and modeling with various types of media, the making of costumes with paper and paste, and sand table projects, satisfy the creative instinct without drawing heavily upon the reserve of sight. Is there any reason why a poster made with figures and letters cut free hand should not count for promotion just as readily as one in which the figures are drawn and the letters printed?

Music

Another white hyacinth is music. The reading of notes calls for such very intensive use of the eyes that, except in cases of unusual musical talent, the outlay is quite out of proportion to the results. But rote singing and appreciation of music are possible without any expenditure of sight, and for short periods of reading simple music, notes may be translated into figures, so that a sight-saving class child showing some talent may not be deprived of his place in the school orchestra. One sight-saving class has a small orchestra of its own that plays, on glasses filled or partly filled with water, many delightful airs from numbers indicating notes.

Art

The sight-saving class child craves color and design particularly because his books, for no apparent reason, are devoid of pictures. With a long handled brush and show card paints he may bring much color and beauty into his world. A long handled brush makes it possible for him to work at an acceptable eye distance and encourages large, rather than detailed, results; show card paints have no irritating glare. A single sweep of a brush rightly used will result in the long, graceful leaf of the daffodil, and a few extra strokes will bring the flower itself to life. Thus most satisfying results may be obtained with the least possible expenditure of sight.

In order to use the school curriculum for the greatest possible enrichment of the program with the least possible outlay of sight, the sight-saving class teacher must understand her work so well

and be so enthusiastic about it that her enthusiasm will be contagious. Why prevent children, already handicapped by defective vision, from enjoying as fully as they can the beauty of the world, when there is a wealth upon which they may draw without detriment to their sight? The art supervisor is not a special supervisor for normally seeing children; she is supervisor for the school system. If the teacher of the sight-saving class can explain to such supervisor the sight limitations of her pupils, as well as their sight possibilities, and can inspire her with enthusiasm for sight-saving class activities, the supervisor will welcome the opportunity to offer most worth-while suggestions. This is likewise true of the music supervisor.

Physical Education

Sight-saving class pupils need physical education quite as much and often even more than the normally seeing. Here again there is room for co-operation with the supervisor and teacher of physical education. If remedial measures are necessary, whether difficulties needing correction are the result of defective vision or not, the same plan should be followed that is used for normally seeing children requiring remedial work. The special supervisor of such remedial work should give the same attention to these children that she would to any other group.

For the general physical education of sight-saving class children, two very definite questions must be answered. Will physical exercises given to the regular group be harmful? Can sight-saving class children, if instructed with large groups, see well enough to follow the exercises demonstrated by the teacher of physical education? If not, they may interfere with the group as a whole.

It is usually possible for a teacher of physical education, provided she understands the limitations and possibilities of the sight-saving class pupil, to make the necessary adaptations for him, especially if the work is so well done in the sight-saving class that the child himself understands his own limitations and possibilities and obtains the consent of the teacher of physical education to omit such exercises as he knows will be harmful. Thus both the teacher of physical education and the child who has serious progressive eye trouble will realize that violent exercise, such as diving, may increase the difficulty. Hence both will co-operate to limit

the exercising to what can be undertaken without harmful results. The child with low vision who cannot see well enough to follow directions may request and be given a place near enough to the teacher to insure no interference with the work of the rest of the group.

Principle of All Curriculum Making

The White House Conference lays emphasis upon the fact that education must be founded upon strength and not upon weakness. Remedial measures may be, and usually are, necessary for the handicapped, but it is never upon their weakness that education is built. The first step in all modern education is to find wherein the strength lies and to build upon that as a foundation. In all curriculum making this is taking paramount place. It must be applied to the handicapped child as well as to the normal child, and, just as under normal conditions, adaptations must be made, so in handicapped groups a curriculum suited to the individual need of the child will, in time, be developed.

No longer are poets refused college degrees because they cannot work problems in differential and integral calculus, nor is the mathematician disqualified because he cannot write an ode to Sylvia. In like manner, the sight-saving class boy can no longer be deprived of promotion or entrance to high school or college because he cannot make a mechanical drawing, nor can the sight-saving class girl be so deprived because she cannot sew a fine seam. Just as the poet may be permitted to substitute his ode for the mathematical problem, and the mathematician the solution of his problem for the ode, so the sight-saving class child may offer those achievements that lie along the line of his strength.

So, too, may be developed his inherent qualities through wise planning to meet each special education problem. First must come understanding of the problem; with wise understanding there will develop that co-operation which is essential to desired results. Was not this what Violet Alleyn Storey meant when she wrote:

> "Milton, the blind, who looked on Paradise!
> Beethoven, deaf, who heard vast harmonies!
> Byron, the lame, who climbed toward Alpine skies!
> Who pleads a handicap, remembering these?"

Nutrition in Relation to the Eyes

Park Lewis, M.D.

VITAMIN A deficiency in the diet may result in "night blindness"—manifested by a difficulty in seeing under faint illumination, as in twilight. This is only one of the eye conditions resulting from diet deficiency

THERE is, perhaps, no word that has grown more in popularity within the past five years than the word "vitamin." It has invaded the parlance of the butcher, the baker, the grocer, the housewife, the advertiser, as well as of the doctor, the nurse and the dietitian. Orange juice, cod liver oil, rice, and fish (to mention but a few), are no longer merely so much food, but possessors of forces which make or break the human body. The mother of today knows that cod liver oil is given to prevent rickets; that orange and tomato juices possess powers to prevent scurvy; that even bananas, which were considered practically poisonous for children, are now included in babies' diets as healthful food.

Eye and Body Structurally Related

With the consciousness of the ability to develop a healthy and stalwart body, has developed the knowledge that general weakness of the body may result in a weakness of any of its parts. And, conversely, a weakness of one organ of the body may unbalance the sturdiness of the whole body. It is easy to understand this when we consider the development of the body from its very conception. Let us see how, from the embryonic state, the eye grows as a part of the body.

In the process of the development of the fertilized ovum into the embryo, the primitive cell divides into two cells, these into four, these again in eight, continuing to double until a structure is formed. This gradually separates into three layers: an outside

which is known as the ectoderm; an inner, the endoderm; and a middle, or mesoderm. Out of these grow all of the tissues of the body, and they retain throughout life certain characteristics of the original structural layer. The outer layer, or ectoderm, forms the skin and lining membranes of the anterior portion of the mouth, nose and eyes. From this layer grow also the eyelids with the glands upon their margins; the cilia, or eyelashes; and the mucous membranes with which the lids are lined. From this layer, too, come the ocular nerves and the epithelial or covering membrane over the cornea which is the transparent part of the eye.

Therefore, it can be understood that when conditions arise causing skin disturbances, we may look for like developments in other structures which came from the same embryonic tissue. Corneal ulcers, mucous inflammations and other destructive changes are examples of eye symptoms which may be related to skin disorders.

From the middle layer come the great internal organs. From this also are formed the vascular tissues, the humors of the eyes and the muscles of the eyeballs. It is well to bear this fact in mind as we study the effect of nutritional imbalances on the eyes, for any or all of these structures are affected by excesses or deficiencies in the nutritional requirements. It must not be forgotten either that mechanically and chemically the changes that take place in the animal body in its growth and development are closely allied to those which occur in the combustion of fuel in a furnace. In both instances it is the development of energy through the destruction of heat-producing substances. In the furnace are burned hydrocarbons in the form of wood and coal; in the animal body are consumed the carbohydrates, and both in the presence of oxygen.

Food as Fuel

One of the most important advances that have been made in our food problems is the recognition of what is known as the isodynamic law. Briefly stated, it is that food consumed within the body will liberate the same amount of energy that it would if burned in oxygen outside of the body. The amount of heat produced is measured by a unit known as the calorie. The number of

calories that should be consumed in the animal body is conditional upon the energy required. This is determined by the age, the habits and the occupation of the individual. If the number of calories taken into the body is greatly in excess of their possible consumption, deposits of fat may be found. The substances that are required in the system for the maintenance of normal health are the proteins, the carbohydrates, the fats, certain mineral elements, water and vitamins. An excess or a deficiency of any of these will result in a systemic imbalance through which the eyes as well as other parts of the body may suffer.

To make this more clear a few words must be said concerning each of these essential elements. The proteins are absolutely necessary to life. They replace the losses in the soft tissues. While they are found both in vegetable and animal substances, the vegetable protein is not of as good quality as the animal protein. Both, however, are needed. Protein is abundant in cereals, beans, peas, nuts and other vegetables, and in meat, eggs, milk and fish. Liver has a high protein value. From sixty to one hundred grams of protein a day should suffice the normal person. The American dietary is usually too high in protein content. Therapeutically, it has been found that an abundant protein diet is a valuable aid in treatment of wounds.

The carbohydrates include the sugars and starches; stored in the body they increase the deposit of fat. They are found largely in the grains and root vegetables, such as rice and potatoes. Many children suffer from inflammatory lid and corneal troubles which are brought on by the excessive use of sugar and candy. The overweight diabetic having too rich a diet of starch or sugar will often develop cataract, manifesting itself at its commencement, in an adult, by an increasing myopia. With it also are found retinal changes and not infrequently hemorrhages. The fats taken in suitable quantities are found both in animal and plant life. The fats of milk, butter and eggs are of the highest importance. Those of certain salt water fish as the cod and halibut contain iodine. In the liver of the fish this is found in large amounts. Vegetable oils lack essential mineral and vitamin qualities that are found in animal oils. It has been thought by some observers that calcium deficiency through its effect on the endocrines may have an im-

portant bearing in glaucoma. In those who are undernourished an excessive intake of salt interferes with digestion and may unfavorably affect a retinal inflammation.

The Vitamins

It has been only during the last quarter of a century that the researches of a number of investigators, many of them American, have explained the principles of the historic dietetic procedures, such as: the use of fresh vegetables and citrus fruits in the treatment of scurvy; cod liver oil in rickets; feeding of liver in night blindness; and the substitution of barley for polished rice in beriberi. An extensive medical literature has grown up during the last few years on the subject of vitamins and more particularly on the wide range of usefulness of vitamin A.

Vitamin A.—This has been of special importance because it has to do with changes occurring in the eyes. It has been known for ages that certain conditions of malnutrition had an affect upon eye changes, and as long ago as the time of Hippocrates the use of liver was recommended for nigh blindness. Livingstone, when exploring in Africa, related that when his party was obliged for a time to live on roots and meal, there developed an affection of the eyes like that found in the case of animals limited to a starchy diet. Poorly nourished slaves in Brazil during the last century suffered from a condition of night blindness or dryness of the conjunctiva. This condition has recently been well understood and found due to the absence of vitamin A in the diet. In an institution in Copenhagen the young children were divided into two groups, one group received milk, a plentiful source of vitamin A, and the other received fat or vegetable fat in margarine, lacking in this essential. In eight cases among those on the vegetable diet, xerosis developed and was subsequently relieved by cod liver oil. On the other hand, in the group given whole milk, no disturbances occurred.

In 1919 it was discovered that the distribution of vitamin A is closely related to the yellow pigmentation found in certain fats. Carotin is closely allied to vitamin A and a very small amount will overcome vitamin A deficiency. Vitamin A deficiency may result in two types of change, night blindness (hemeralopia), and

those corneal changes known as xerophthalmia (condition of great dryness) or keratomalacia, which means breaking down or softening of the corneal tissues. Night blindness is manifested by a difficulty in seeing under faint illumination, as in the twilight. The retina of the eye contains a large amount of vitamin A and in its absence this imperfect functioning is evidenced. Pillat, who has had experience with deficiency diseases in China, found not only night blindness but inflammation of the meibomian glands in the lids, marginal inflammations and sties, decreased lacrimation, puffiness of the lids, and blackheads, or comedones. He considers keratomalacia as the final stage of vitamin A deficiency in the eyes of adults. When the surface resistance is lowered, various bacteriological infections may readily follow.

Vitamin B.—Vitamin B, the second of the vitamins which are designated by the letters of the alphabet, has two fractions, known as B_1 and B_2. B_1 is antineuritic. It is not stored in the body to any great extent. Foods containing it should, therefore, be part of a continuous diet. Its absence causes affections of the nervous system, resulting in irritation and weakness of the eyes. It is often low or lacking in the diets of those suffering from iritis and other involvements of the uveal tract. The separation of these two fractions has not yet been thoroughly analyzed but both seem to be necessary. Although the wheat germ is exceptionally rich in this element, white flour from which the germ has been eliminated is lacking in the B complex. It is also found in milk, green leafy vegetables, in bananas, in yeast and in fruits. It is lacking in the highly refined foods.

Vitamin C.—Vitamin C is insoluble and disappears in foods heated in the open air. It is largely lost in canned foods unless they first have been soaked in salt water. A generous amount of vitamin C is needed for the maintenance of good health. It is found in the citrus fruits, in berries, in tomatoes, in cabbage, lettuce, onions, peas and spinach. There is little or no vitamin C in cereals and meat, and a small amount in milk.

Vitamin D.—Vitamin D is found in few of the natural foods but is in cod liver oil, liver and yolks of eggs. It occurs largely in sea fish and sea foods. Steenbock recently found that the irradiation of foods with ultra-violet light gave them the properties of vitamin

D. By this process many edible products are now sold containing this important element which they would otherwise not have.

Vitamin E.—Vitamin E is essential for fertility and is found in the vegetable oils and in wheat embryos. Lane believes it to be probable that a disturbance of balance in the body salts may have a bearing on the production of cataract and glaucoma, but in that they are so essentially different, the same cause can hardly apply to both.

Deficiency Diseases Related to the Eye

The late Dr. James A. Stucky, who was very familiar with the conditions of the mountaineers in Kentucky and Tennessee, was of the opinion that many diseased conditions of the eyes in those sections were caused by malnutrition. In the badly ventilated and crowded hovels in which many of these people live he found insufficient food, badly prepared. Meats were fried, and vegetables were boiled until all the essential substances were taken out of them, and the juices ("pot liquor") were given to the pigs. The pigs were fat and well nourished while the children were scrawny and weak. Throughout the mountains were many cases of inflammations of the eyes. When poor living conditions and diets were changed the eye diseases largely disappeared. A deficiency of vitamin B, said Stucky, impairs the appetite and digestion, produces constipation, causes subnormal temperature (cold hands and feet) and various other manifestations referable to the nervous system.

Bell has shown the influence of diet in many clinical cases of corneal ulcer, keratomalacia, glaucoma, choroiditis and other ocular diseases. Stucky was of the belief that trachoma was a deficiency disease which was dependent upon faulty or ill-balanced food supplies. An excessive starchy diet in young children will sometimes so affect the eyelids that sties and cysts are produced; and the tendency may be controlled, when no refractive strain is present, by a regulation of food intake.

Scurvy is essentially a deficiency disease and is manifested by hemorrhages. These sometimes occur in the orbit and result in a pushing forward of the eye. This is a sign that should be borne in mind as it may easily be confused with other conditions causing

this symptom. Guiseppe, writing in an Italian journal, found cases of cataract, iridocyclitis, glaucoma, paralysis of the external rectus muscles of the eye, choroiditis and retinitis, in diabetics not using insulin. In iridocyclitis the inflammation was modified when treatment with insulin was begun. Under suitable diet and the use of insulin, cases of myopia and choroiditis were improved. Eye surgeons recognize the necessity of reducing the blood sugar in diabetic patients by the use of proper diet, before subjecting them to surgical operations.

In cases of true or pseudo-pernicious anemia in which there were retinal hemorrhages with fullness of the veins and pallor of the optic discs, the hemorrhages cleared up, leaving no trace, and the pallor of the optic disc and the retinal edema were improved within a month under a diet of partially cooked liver, which is rich in vitamins. In Bombay, keratomalacia was very common, due to a deficiency of proper food elements. The first symptoms were night blindness with dryness of the cornea and conjunctiva. As the disease progressed, disturbances resulted in the formation of ulcers, with sloughing, perforation and panophthalmitis. Under proper treatment, taken sufficiently early, these conditions were promptly relieved.

The importance of a recognition of food deficiencies has long been recognized in the more pronounced forms, such as scurvy, beriberi, pellagra, etc., but it must be remembered that slighter manifestations of all of these conditions may also occur when there is not a complete absence, but merely a limitation, of essentials in diet. It is important, therefore, in considering diseases of the eyes, that a regulation of diet be given prime attention, especially when such conditions cannot be ascribed to other causes.

How Our Schools for the Blind May Assist in Preventing Blindness*

Lewis H. Carris

SCHOOLS for the blind may aid in the conservation of vision by ascertaining whether all possible treatment and operation have been provided to restore sight or to prevent its further deterioration. They may be of great help also by emphasizing to the public that many of their pupils are needlessly blind

THERE is a major distinction between welfare work for the blind and prevention of blindness in the fact that the former deals almost exclusively with the end results of eye catastrophes of all kinds. The potential client for service by welfare agencies for the blind has presumably had all possible medical and surgical attention in an attempt to save his vision; far too often this is a losing fight and the oculist finally pronounces the sight lost. Then, and then only, must the adjustment of the individual be made to a darkened or black world. It is this adjustment with which agencies for the blind are primarily and constantly concerned. This is the work of societies for the blind, commissions for the blind, the Braille press, and the schools for the blind.

Responsibilities for Prevention of Blindness

Prevention of blindness, on the other hand, includes all those activities of society that may help to retain sight. Its aspects vary in scope and definiteness and cover a long list of services. Theoretically, yes even possibly, every one is in danger of becoming blind. Prevention of blindness seeks to discover eye hazards and to set up warning signs that all may read while they still have sight. This work includes the education of society in the matter of proper eye hygiene, the avoidance of eye diseases, the importance

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of prophylaxis at birth, the prevention of eye accidents, good illumination, the early detection of defective vision and its proper correction. In a word, this part of the prevention of blindness program may be expressed in the slogan, "Keep well eyes well." Organized work for prevention of blindness attempts to set up an active co-operation with all agencies of society directly or indirectly concerned with the conservation of vision, and the list is a long one; for after all, there are few agencies of society which are not involved in the saving of sight. To name only a few,—school systems, public and private; national, state, and municipal boards of health; safety councils and societies; illuminating engineers; public health nursing organizations; public libraries; parent-teacher associations, and organized social work. The prevention of blindness unit must make itself an authority to which all may turn for help in keeping eyes well and in detecting potential cases of blindness as early as possible.

The second and more concrete responsibility of prevention of blindness is to seek out the potentially blind person and to bring to him all possible surgical, medical, hospital and social service to the end that blindness may be averted. It is based on the assumption that at least half and probably more than two-thirds of all blindness can be avoided by universal application of the facts already known in medicine, surgery, accident prevention and the laws of heredity.

These distinctions indicate the basic differences between the American Foundation for the Blind and the National Society for the Prevention of Blindness, and in general follow through all similar activities wherever found. The thinking on this subject is usually confused through the fact that the same agency is often intrusted administratively with the two kinds of work. Many of our state commissions for the blind have active and effective departments for the prevention of blindness, which are more active and effective as the two types of work are more separated and have individual budgets and different personnel.

Joint Responsibilities for Blindness Prevention and Care of the Blind

For the purposes of illustration and theoretical discussion, let us imagine two circles—one to include all activities for prevention

of blindness and the other all activities for the welfare of the blind. Would these circles be separate, tangent, or intersecting, or would one include the other? It is apparent that they would intersect, but that the common area would be very small. It is also apparent that the diameter of the prevention of blindness circle would be much longer than that of the welfare circle. An examination of the items included in the prevention of blindness circle would indicate that they range from the nebulous conception of popular education in items of vision conservation to the hospitalization, operation or treatment of glaucoma or trachoma cases; while the welfare circle, though much smaller, is made up for the most part of the items of education, employment, support and recreation.

It is to be emphasized that the two circles do intersect and it is important to consider just what elements are included in the common segment. What is this community of interests, even if it is small? First of all, it is important that no individual should remain blind if medical or surgical treatment will restore sight. Because of the imperfect organization of society in its prevention of blindness activities, individuals whose sight may be salvaged are often presented as applicants for service by welfare organizations for the blind. The institution, whether school, workshop, or society for the blind, has the important responsibility of admitting for permanent aid only those whose diagnoses of blindness have been made by competent medical authorities. Where there is any doubt, service must be provided either by this agency or by an agency engaged in prevention of blindness as such. There can be no more glorious accomplishment for a school or workshop than to restore to the ranks of the sighted one who has been considered blind. The number of such individuals is, of course, relatively very small, yet is great in importance.

Even in cases which apparently offer no hope of restoration of vision, the school for the blind has a responsibility for obtaining complete eye examinations. In the first place, it is important in the educational process that the teachers and others who are to help the child to make the best use of his powers should understand (as well as it is possible for a layman to understand medical diagnoses) the exact degree and nature of the child's disability.

A teacher who has this knowledge will be able not only to train the child in the use of his remaining visual perception, but also to help preserve such vision by guarding against its overuse. Another service which schools for the blind can offer toward prevention of blindness is the provision of accurate statistical data on causes of blindness. There is a crying need for such material in order that the prevention of blindness worker may be provided with the necessary arguments and tools for his work.

In the adjustment of an individual to his environment, it is generally agreed, the greatest possible use should be made of any remaining sight. The person who can distinguish between darkness and light has some advantages over the totally blind. One who can distinguish fingers at arm's length has an advantage over both. One who may be totally blind as far as reading the largest print is concerned may still be able to avoid obstacles; and so we might grade people from those who have seriously defective vision to the person with perfect vision.

The process of sight-saving has two aspects: first, and primarily, the treatment and correction of eye diseases and eye defects so that the vision may approach normal, and the prevention of retrogression of vision; and, second, the creation for those of very limited vision, whose eye conditions are static, of an environment which approximates that of the sighted rather than that of the blind world. A confusion of thinking has grown up around this secondary meaning attached to the term, "sight-saving," referring to the process of helping individuals to make use of their remaining sight in securing an education and participating in life's active work.

As an example of the term, sight-saving, in its secondary meaning, we may mention the conservation of vision classes. The services of such classes may be divided into two categories: (1) providing the ophthalmologic and pedagogic needs for children with seriously defective vision, whose eye conditions might progress toward blindness if they were not supervised both medically and educationally; and (2) providing for children of very limited vision, whose eye conditions are static with no hope of improvement nor fear of further deterioration. While it may be true that the sight-saving class does not improve the vision of this latter

group, it affords an opportunity for these children to live in the sighted world as sighted persons instead of being relegated to the life of the blind, with its limitations. Under the guidance of the sight-saving class, these children can be taught to make the most of their remaining vision; frequently, they can overcome their handicaps and participate in some form of vocational activity.

Educational Differentiation Between Blind and Sighted

There is general agreement that, educationally, the decisive point differentiating between a blind and a sighted person is whether there is enough sight to make possible the use of print in securing an education. If print can be used, conservation of vision classes should be made available. If education must come almost wholly through the tactile and auditory senses, then the school for the blind is the place for education.

There is one other guiding principle which we believe to be true. Wherever possible, it is advantageous to keep the partially sighted person in the world of the sighted, and not in the world of the blind. There have unquestionably been many tragic cases of partially sighted children who have been sent to schools for the blind and who have realized only too late that they could have been educated by visual methods.

What has been said so far relates almost wholly to the fundamental distinctions between and the common activities of prevention of blindness and welfare work for the blind and the underlying principles involved in both cases. The specific question indicated in the title of this paper deserves a more specific answer.

Responsibilities of Schools for the Blind

There is little that the school for the blind can do in the general activities for prevention of blindness in the sense of furnishing authoritative information to agencies of society for "keeping well eyes well." This does not at all mean that the individual principal or teacher may not be actively engaged as an interested citizen in the promotion of prevention of blindness. No doubt, many teachers in schools for the blind become interested in prevention of blindness through the needless tragedies they encounter in their work. My experience in both the educational field and in

prevention of blindness leads me to view with respect both fields of activity and to assert with some assurance that the job of running a school for the blind is in itself a major task.

One specific thing that a school can do in the general field of prevention of blindness is to give publicity to the fact that many of its pupils are needlessly blind. It is through attempts to alleviate the ills of society that the necessity for prevention is realized. It is to their everlasting glory that from the principals of schools for the blind largely grew that part of the work which has resulted in the extensive lay movement for the conservation of vision conducted in co-operation with the medical profession.

Responsibility for Restoration of Sight

Schools for the blind may aid in the conservation of vision by ascertaining whether all possible treatment and operation have been provided to restore sight or to prevent its further deterioration. This means competent ophthalmological supervision and, in many instances, the provision by the school of such treatment or operation. Every school sending back one of its pupils to the sighted world deserves a distinguished service badge for work in the prevention of blindness. It is certainly true that there are many children now in schools for the blind who could have their sight restored. In regard to one school, that at Romney, West Virginia, Dr. J. E. Blaydes, an oculist, states in a report to Dr. W. T. Henshaw, state health commissioner, that of the 114 pupils examined, in his opinion, eleven could be restored to normal vision; eight could be given vision of 20/30 to 20/50; seven could be given vision of 20/50 to 20/70—sufficient for reading; three could be given vision of 20/100 to 20/200; and three could be given "travel vision." This makes a total of 32 of 114 individuals, or about 29 per cent, who might have their sight improved by proper medical and surgical attention.

Apropos of the secondary meaning of the term, sight-saving, schools should make use of any remaining sight in the educational process. No child should be retained in a school for the blind and be forced to read with his fingers when he can make advantageous use of his eyes. Even when there is a prognosis of blindness, it is probably inadvisable to teach braille unless the physician refuses

to permit the use of sight under any circumstances, and in this case the child should not be admitted to the school until actual blindness occurs.

Policies of Enrollment in Schools for the Blind

There are two policies generally observed in admitting pupils to schools for the blind: either confining enrollment to those educationally blind, or enrolling both these and the partially sighted (those who are not educationally blind). We believe that the educational processes for the two groups are so different that the policy of admitting only those who are blind should be strictly followed. If, however, schools for the blind are obligated by law to admit partially sighted pupils, they should differentiate between these groups as far as is administratively possible.

Until the time when a change in the law will make it possible for the school to confine its activities to the real purpose for which it was established—the education of the blind child—arrangements must be made that the child with seriously defective vision who finds himself placed in a school for the blind shall be instructed by educational methods adapted to the use of the sighted, as now carried on in sight-saving classes in public schools. This would include adequate lighting, the provision of clear type books, a teacher especially trained to give such instruction, and ophthalmological supervision of eye conditions.

Even among the pupils who can legitimately be classed as blind, there will be in every school varying degrees of visual perception. In a school where the equipment is provided chiefly for those who are totally blind or have barely light perception, it is possible that certain environmental conditions and certain methods of teaching would have to be more carefully adjusted and censored for the group who have some vision. The child who can see a little will, unless prevented from doing so, try to use his eyes in processes designed for the sense of touch. This is frequently the case when children of even very limited visual acuity are taught braille; the result is that the slight vision which they have is endangered when it might have been preserved, if not improved. A further handicap for the child of limited vision, as well as for the teachers, in schools for the blind is the poor lighting in classrooms, corridors

and other places of assembly in some of these institutions. So far as the blind are concerned, the factor of lighting is secondary; but with those who have some sight the tendency to utilize the eyes even in poor light results in a strain on the visual powers. Of course, poor lighting is not encountered in all schools for the blind, but it is likely to occur more frequently there than in the regular schools.

What has been said about conserving the sight of pupils can also be applied to the necessity for providing working conditions suitable to conserve the eyesight of the teaching staff and employees generally.

Should Schools for the Blind Maintain Sight-Saving Classes?

It must always be kept in mind that the successful instruction of the sighted (with seriously defective vision) is a distinct problem in almost all of its aspects from the successful instruction of the blind. The question has often been raised as to whether or not a school for the blind should maintain conservation of vision classes. Educationally all arguments are against this practice. Briefly summarized, the reasons are:

1. The necessity for keeping sight-saving class pupils in the world of the sighted. This means mingling with sighted pupils and following the non-segregated plan so successful in the public schools.
2. The fact that the educational processes for the blind and the sighted are so different that it is rarely that the same teacher can succeed in both types of work.
3. The difficulty of successful administration of the mixed groups.
4. The tendency in schools for the blind to overwork the partially sighted in guide service and other personal service requiring the use of the eyes.

Those of us who are interested in the establishment of conservation of vision classes in the public schools recognize the responsibility of the state and local community for the education of the isolated child who resides in a district too small to maintain a class. So far there have been established only three county classes using the transportation system of the consolidated school to bring children from great distances. It is not at all likely that the county

class will prove the ultimate solution of the problem of the rural school child with seriously defective vision. Yet it is not probable that the state will set up a separate school for these pupils. In such cases it would be better to board a sight-saving class child under proper home conditions than to have him enrolled in a school for the blind.

With the increasing success of prevention of blindness work, there will be a decreased attendance at schools for the blind. Already evidence indicates that for the past quarter of a century there has been a relative decrease in the number of blind children attending schools, even taking into account the day schools for the blind established in the cities. The growth of the general school population has far exceeded the growth in registration at special schools for the blind. This is true in spite of the greater efforts that are being made to find the blind children and to urge their attendance at schools. It is also probable that there are at present included among such pupils a considerable number of blind children with poor physical stamina who survive only because of the effectiveness of the modern health movement. Unquestionably, the reduction of infant mortality carries in the wake of its great wave of public welfare a flotsam of individuals poorly equipped for life's struggle. Blindness is often the evidence of a loss borne by the frail body barely saved from death. There, too, the survival of the more or less unfit brings a crop of blind pupils with the additional handicap of feeblemindedness. These are all problems which must confront the administrative head of a school for the blind endeavoring to keep his institution apace with a rapidly changing world.

In conclusion, we must express again the great appreciation for the individual efforts made by superintendents of schools for the blind in promoting activities for the prevention of blindness, and this usually in addition to the heavy administrative tasks with which they are already overburdened.

The Medical Aspects of the Visually Handicapped*

Frank H. Rodin, M.D.

IN 1907, approximately 28 per cent of the children admitted to schools for the blind in the United States had lost their sight through ophthalmia neonatorum. In 1931, this was reduced to 7.5 per cent

What is "Visually Handicapped"?

BEFORE proceeding with the paper it is well to attempt to define just what we mean by visually handicapped. In the broad sense it means a condition where the vision is so poor that the individual is greatly handicapped as compared with a person with normal vision. He has difficulties in reading, getting around with ease, seeing distinctly, ability to earn a livelihood, etc. This includes individuals whose vision in the better eye is 20/70 or less; that is, less than 65 per cent in the better eye. Included in this group are those people whose vision is such that further loss of vision may take place unless special precautions are taken, such as education in sight-saving classes or prevention of the use of the eyes for close work.

What is Blindness?

Blindness, as defined by Webster, is the state or quality of being blind, that is, destitute of the sense of seeing, either by natural defects or by deprivation. For practical purposes, blindness may be defined as a condition where the vision is reduced in the better eye to 20/200 or less. This is 20 per cent of vision or less. Most of the people who are considered blind are those whose vision is limited to the recognition of fingers at 10 feet or less. Various

* Read before the Northern California Council for the Education of Exceptional Children at the Third Annual Session, Mills College.

eye lesions may modify these standards defining the visually handicapped and the blind.

Prevention of Blindness

As prevention plays an important part in preventing the loss of vision, a few remarks about it will not be out of place. The most striking result of prevention of blindness is the reduction of the number of cases admitted to the schools for the blind due to ophthalmia neonatorum. In 1907, 28 per cent of those admitted were blind from ophthalmia neonatorum. In 1931 this was reduced to 7.5 per cent. Even this is 7.5 per cent too high. Considering this from a different angle, we may say that in twenty-four years ophthalmia neonatorum as the cause of blindness was reduced 73.4 per cent. Or, in 1907, the cause of blindness in one out of four children was ophthalmia neonatorum. In 1931, ophthalmia neonatorum was responsible for one of thirteen children admitted to the schools for the blind. There is no reason why any child with ophthalmia neonatorum should become blind. This is well illustrated by the work done in the State of New York by the Prevention of Blindness Department, New York Commission for the Blind.* The legislature gave them a fund with which to provide emergency hospitalization for cases of ophthalmia neonatorum, pending the making of arrangements with responsible officials. With this fund, the Commission provides immediate hospitalization for such infants and, in special cases in which the parents refuse to allow the baby to go to a hospital, will meet the expense of a special nurse at home. During the last three years 163 cases were registered. In the first year seven babies became blind. In the second year three babies lost their vision completely; a fourth lost the sight of one eye; two had only partial vision. In the last year no baby lost his vision from ophthalmia neonatorum in the State of New York. I have dwelled on ophthalmia neonatorum rather lengthily as here is one condition which, under proper and early care, can be cured. Unfortunately, we are not able to show such marked improvement in the prevention of blindness for other eye ailments.

* Responsibility of New York State to Prevent Blindness, G. S. Harper, SIGHT-SAVING REVIEW, 1:43–51 (Sept.), 1931.

Syphilis.—Syphilis is still responsible for a great many cases of poor vision. In childhood a condition known as interstitial keratitis, which affects the cornea, often leaves opacities of the cornea which greatly reduce the vision. Congenital eye lesions, reducing the vision, are common in syphilitic children. The majority of optic atrophy cases we see in adults are caused by syphilis. In addition to this, syphilis is responsible for many diseases of the eye which affect the vision greatly and often cause blindness. In a previous paper* I showed that one of ten persons with syphilis had an eye lesion, and some of these lesions were optic atrophy, changes in the retina and in the choroid—lesions which reduce the vision greatly and are the cause of a great deal of blindness. Of 1,000 patients studied, 20, or two per cent, had optic atrophy, indicating that approximately two per cent of the syphilitics will develop optic atrophy, one of the causes of blindness.

The prevention of syphilis and the early recognition and intensive treatment of this condition, are very important in preventing the serious complications that this disease effects on vision.

Glaucoma.—The disease of the eye known as glaucoma causes about one-third of all blindness occurring in the latter part of life. Glaucoma is commonly known as "hardening of the eye," and it represents an increase of pressure within the eye. It is impossible to consider at this time the causes and symptoms of glaucoma. The unfortunate part of this condition is that the patient is often unaware that he has a serious eye lesion, for the commonest type of glaucoma gives no pain. The person grows aware that his vision is becoming poor and that he does not see well about him (defects in the visual fields). Unfortunately, these people often do not present themselves to eye physicians until the loss of vision is so great and the damage to the eye is so advanced that very little can be done for their vision. This condition is easily recognized by an eye physician on examination and, in the early stages, progress may be arrested and the vision may even be improved. This increased tension presses on the delicate and easily vulnerable fibres of the optic nerve, causing damage. If the condition is not treated medicinally or, if necessary, surgically, the

* Eye Lesions in Patients with Positive Wassermann Reactions, F. H. Rodin and J. G. Carson, J. A. M. A., 93:360–361 (Aug. 3), 1929.

optic nerve may be permanently damaged. Glaucoma acts like a thief in the night. And by the time the person with glaucoma becomes aware of the loss of his vision often very little can be done to restore it, although much can be done to prevent further loss. If, late in life, the vision cannot be corrected to normal with glasses, a patient should consult an oculist to be assured that he has no glaucoma which is responsible for the poor vision. It is very tragic that these patients do not avail themselves early enough of the aid of an eye physician.

Eye Accidents in Childhood.—About 1,000 children receive eye injuries in the United States every year, the majority of which are avoidable.

Parents do not often recognize the danger of letting young children play with sharp instruments, such as scissors, knives, forks, and so on. It is the common experience of every physician to see eye injuries to young children caused by such articles. Usually two children will play with a sharp instrument and one child will injure the other child's eye. Fortunately, as a rule, only one eye is injured. The injury is usually a perforation of the eyeball with either the loss of the eye or a blind eye. In 1928 I reported three such cases.* One case I saw occurred in 1926. A girl thrust a butcher knife into the eye of her sister—a child aged six years. The eye had to be removed. In 1927 I saw a girl aged three and one-half years, who injured her eye with a knife while playing in the kitchen. This child developed a traumatic cataract with an obliteration of the pupil. In 1928 I saw a boy, aged five years, who received an injury to his eye while playing with his sister who thrust the point of a pair of scissors into his eye. A traumatic cataract formed.

The sensible celebration of the Fourth of July reduces greatly the number of eyes injured both of children and adults.

Eye Accidents in Adults.—We see many preventable eye accidents in adults. A great many of them occur in industry. This type of eye accidents may be greatly reduced by the education of the employees to the wearing of goggles and in the designing of machinery in such a way that particles of flying metal are reduced

* Perforating Eye Injuries of Young Children; Report of 3 Cases, F. H. Rodin, California & West. Med., 29:338–339 (Nov.) 1928.

to the minimum. It is considered still one of the greatest causes of needless blindness.

Sight-Saving Classes.—Sight-saving classes* make possible the proper education of children having seriously defective vision. These classes probably play an important part in the prevention and the lessening of the progress in progressive myopia. A proper education for the children so handicapped is almost impossible in a regular classroom. For children with progressive myopia, attendance in regular classes is harmful; and other children with poor vision have a great deal of discomfort and get very little from the regular classes.

These special classrooms, and that also applies to the regular classrooms, should be well illuminated. We will all agree that nothing can surpass the light from the sun. Unfortunately, this light is not always constant in a room. We often have too much sunshine and more often not enough. The desks in the room should be so arranged that advantage may be taken of the maximum amount of light. The blinds should be so adjusted that no glare is present. The best type is the Venetian blind, as it can be adjusted so that the light can be permitted to enter the room and directed to the ceiling and reflected indirectly on the desks. The desks should be free of shining surfaces. It is advisable to have from 15 to 20 foot-candles of light in the room. This illumination should be free of glare. Artificial illumination should be used when needed.

The posture of these children should be watched, as they have a tendency to assume slouchy positions when sitting at their desks.

Of course the visually handicapped, including the blind who have some vision, should have their eyes periodically examined by an eye physician. No person should be admitted to a sight-saving class or a school for the blind without a proper eye examination by an eye physician to see if the vision cannot be improved medically, surgically, or with glasses.

* Sight-Saving Classes in California, F. H. Rodin, California & West. Med., 30:251–255 (April) 1929.

Good Light at Work*

Louis Resnick

PROPER lighting not only averts accidents but leads to more and better work. It decreases mistakes and waste and increases the chances for health and happiness

SCIENTISTS tell us the human eye is simply a protrusion of the brain. More imaginative or romantic persons refer to the eyes as "windows of the soul." Whichever view you take, the fact remains that the eye is not only the most complex organism in the human body, but also the most accommodating organ. The eye can, in a fraction of a second, adjust itself to the most extreme condition—from long range vision to close work—from extreme light to extreme darkness. Because our eyes are so accommodating, because they automatically adjust and readjust themselves many thousand times a day without any conscious effort on our part, and because they may be long overworked before giving any sign of being tired, they are also the most frequently abused organ of the body. Much of this abuse of the eyes may be traced directly to their use under improper lighting conditions.

I think almost everyone will agree that no person can do his work efficiently unless he can see what he is doing, clearly and comfortably; yet you may be surprised to learn that this particular principle of industrial hygiene and business efficiency is being violated every day in thousands of factories, offices and other work places. As a result, many workers suffer from eyestrain—or from one or more of the many disorders which have their root in eyestrain—and industry suffers from decreased production, increased spoilage and errors, increased personal injuries and compensation costs, and lowered plant morale.

* Radio talk over Station WNYC, Thursday, August 25, 1932.

The proper lighting of factories and other work places has always been important from the standpoint of conservation of vision and prevention of blindness, as well as from the purely economic point of view. It is also, however, becoming increasingly important, for two other reasons:

1. The growth of industry and the development of new types of machinery, and its application to ever-increasing numbers of processes, increase continually the number of eye accident hazards to be guarded against. These hazards are decreased to a considerable extent by proper and sufficient illumination.

2. Modern methods of mass production, with their emphasis on speed, often subject the worker to continuous eyestrain. This eyestrain continued over considerable periods of time results in permanent impairment of vision, with the inevitable consequences of increased accident hazards and deterioration of the quality of the product.

Of 50,000,000 electric lamps installed in our industrial plants, less than 25 per cent are so installed or equipped that they will not produce glare. Glare is but one of the defects of industrial illumination. Defective illumination is also one of the principal causes of accidents. The Illuminating Engineering Society estimates that we are losing the services of 125,000 men annually through accidents due to poor lighting. These terms, when translated into dollars, show that industrial accidents caused by poor lighting cost $150,000,000 a year.

That this condition should persist is all the more surprising in view of the fact that investigations by the National Society for the Prevention of Blindness, by the National Safety Council, the American Museum of Safety, the Illuminating Engineering Society, by the lighting industries and by various government bureaus, all show that proper lighting not only averts accidents, but leads to more and better work, and that it decreases mistakes and waste and increases the chances for health and happiness.

And now let me ask and answer the question: "What is good light?"

Any light is good—whether it be sunlight, gas light or electric light—provided there is enough of it; that it is steady; and that it is properly shaded or diffused. No light is good—whether

natural or artificial—if it flickers or is unsteady; if it is of insufficient or of too great intensity; if its source, when on the level with the eye, is unshaded; or if it produces glare.

It is, for instance, just as harmful to read a newspaper on a street car going over a bridge or through the business sections in broad daylight as to read a newspaper in a train if the lights are unsteady. The intermittent lights and shadows thrown across the page by the bridge superstructure or the tall buildings of business districts cause just as great a strain on the eyes as does a flickering artificial light. It is just as harmful to read or do other exacting work with a bright but unshaded light hanging directly before the eyes as to do such work in a dimly lighted room; the muscles of the eyes are strained in either case. Unquestionably, there are thousands of homes, shops, offices, and stores in which people are working either in dimly lighted rooms or with glaring, unshaded gas and electric lights before their eyes.

In the home, proper lighting not only relieves a great deal of avoidable fatigue and thereby makes life happier for everyone, but adds much to the decorative scheme. Probably the worst lighting evil in the home—and it is usually to be found in the work room of the home, the kitchen—is the unshaded electric lamp hanging from a cord in the center of the room or over the kitchen sink. The unshaded light in the kitchen should be replaced by an enclosed lighting fixture close to the ceiling. When this is not feasible or possible, the hanging light should be covered, preferably with a frosted glass shade which will diffuse and reflect all the light and yet keep from view its source, the filament of an electric lamp or the mantle of a gas lamp. Such shades can be bought for as little as 10 cents.

Much of the light by which we see does not come directly from the lamp: it is reflected from ceilings, walls and other surfaces of the room. The better reflectors these surfaces are, the better will be the illumination. In the selection of wall colors and materials, therefore, thought should be given to their light-absorbing and light-reflecting qualities. In the kitchen, where good general illumination is needed, white or other light colored walls and ceilings are desirable.

Few people have become blind wholly as the result of poor

lighting in the home, but the sight of hundreds of thousands of men, women and children has been permanently impaired by long-continued eyestrain resulting from improper lighting in their homes.

The remedies for insufficient light or too much light—gloom and glare, as these conditions are familiarly referred to by illuminating engineers—are usually obvious and attainable with little expense. To avoid gloom, increase the amount of light or distribute it about the room more appropriately so that there will be no dark places where the eyes are to be used for reading or other close work. To avoid glare, shade all gas and electric light so that the filament of the light cannot be seen, and whenever possible read or work with the light falling over your shoulders from the rear; by all means avoid looking directly into an uncovered electric or bright gas light.

Lighting companies today give free expert advice regarding proper lighting of homes, offices, and work places. In most cases, however, a little careful attention to local conditions and the exercise of ordinary common sense will lead to the correction of many lighting defects. Good light helps to make for good sight. Good light is now available at small cost. Sight, on the other hand, is of inestimable value; once it is lost or impaired, it cannot ordinarily be restored. Nothing which serves to safeguard our sight should be considered too difficult or too expensive.

The important things to remember about lighting are these:

Have all lights shaded;
Never read or work with a strong light shining directly into the eyes;
Whenever possible, have the light fall on what you are reading or on your work from above and behind you, or from one side;
If you are not able to read easily with the printed page 12 to 15 inches from the eye, there is something wrong either with the light or with your sight.

Remember that sight is the most valuable of all our senses and that once lost it can never be regained at any price.

Editorial

Heartening Response

IT IS not often that a project toward conservation of vision has as immediate and wide a response as the study of eye accidents in child play, undertaken by the National Society for the Prevention of Blindness. Readers will recall that this report, appearing in the past issue of THE SIGHT-SAVING REVIEW, was based on a questionnaire study of the practices of various states and municipalities regarding the use and sale of fireworks and firearms as toys for children, together with an analysis of eye accidents to children. Following the publication of the report, the same communities were given an opportunity to study it and were asked to consider its recommendations.

Letters of commendation were received from governors and from mayors. Some endorsed the program in letters to the Society and to the press. Requests were received for permission to use the data in radio talks, magazine articles, and for reference reading in class work. The juvenile courts of two of our largest cities asked for information in dealing with problems involving the use of air rifles, etc., by minors. There were requests for assistance in presenting arguments for new ordinances to legislative bodies. One large city, in July, passed an ordinance banning firearms. Several other cities have ordinances under consideration. Many officials asked for copies of a model ordinance. Local newspapers sounded a warning for a "safe and sane Fourth," cautioning against the hazards of fireworks. Quoting from a few responses gives a representative picture.

Hon. A. J. Cermak, Mayor of Chicago, Illinois:

> "I have directed the Commissioner of Police of the City of Chicago to exercise special vigilance at this time in the enforcement of the City's ordinances against the sale of fireworks and the sale and use of prohibited firearms and toys in the nature of firearms. I am also causing a proclamation to be issued to the City of Chicago soliciting their co-operation

in reducing the number of serious accidents from fireworks, air rifles and toy weapons."

Dr. Walter C. Klotz, Director of the Clinic of Cornell Medical College, New York, New York:

"Thank you very much for keeping me on the mailing list in the distribution of the interesting publication regarding blindness of children due to needless accidents. I was very glad to have this additional material in connection with a course of literature at the New York School of Social Work."

Mr. R. W. Sollinger, Alderman, 17th Ward, Syracuse, New York:

". . . I was indeed grateful for the interest shown in your letter and literature forwarded to me which has helped materially to successfully place on the statute books in the City of Syracuse the elimination of fireworks and firearms, with the exception of municipal or organized displays."

Hon. Robert Pfeifle, Mayor of Bethlehem, Pennsylvania:

". . . wish to inform you that the Bethlehem Police Department made special efforts during the past several years to enforce said Ordinance. We have confiscated hundreds of air rifles taken from boys throughout the City, and accidents from said weapons have been reduced to a minimum.

"I note in your letter that the National Society for the Prevention of Blindness has in preparation a model Ordinance dealing with such hazards, and upon completion, will be sent to the legislators of every state and large city in the country. I would appreciate receiving a copy."

Hon. Heber Ermentrout, Mayor of Reading, Pennsylvania:

"I greatly appreciate your letter, together with the marked copy of your SIGHT-SAVING REVIEW which you so kindly sent me.

"I will be only too glad to give this worthy cause all the consideration and publicity it deserves with the hope of impressing the public with its importance."

Mr. Austin J. Roche, Commissioner of Police, Buffalo, New York:

". . . We have an ordinance regulating the use and sale of fireworks, but it is not very stringent. A few days ago I communicated with our Corporation Counsel with a view of

having a more stringent ordinance drawn. I understand that your organization is preparing a model fireworks ordinance, and if so I would be pleased if you would forward a copy to me."

Hon. Frank Doyle, Mayor of East St. Louis, Illinois:

". . . Would further say that our police department will be requested to follow closely your recommendations and try and keep accidents to a minimum."

Hon. R. B. Gautier, Mayor of Miami, Florida:

"I am in sympathy with your proposed ordinance and trust you will send me a copy of it as soon as preparation is completed."

Note and Comment

"Throw Away Your Glasses."—In view of the increasing publicity given to quack doctors and charlatans who advertise special exercises in lieu of glasses, it seems timely to publish several topics from past issues of *Hygeia* which cover the subject so adequately that no further comment or discussion on our part is required.

In answer to a question from a reader, "What is your opinion of eye exercise to correct eyestrain and poor sight?" *Hygeia's* editor supplied the following answer:

> "The rational treatment of poor eyesight and so-called eyestrain depends entirely on the cause of the trouble. If the bad eyesight is due to a malformation of the eye, such as a short far-sighted eye, or a long near-sighted eye, or an oval astigmatic eye, the only exercise that will improve the sight is that involved in lifting a pair of correct glasses on to the bridge of the nose.
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> "All the exercises designed to improve the vision of an abnormally formed eye, with one exception, have been foisted on the credulous public by charlatans. The exception is in children under the age of 6 whose two eyes are not alike and who in consequence have different degrees of vision in each eye. A certain amount of development of the poorer eye may be brought about by exercise. This exercise consists, not in rolling the eye, but in closing off the good eye and forcing the child to use the poorer eye. In a large percentage of cases, the vision in the defective eye can be developed to a fairly high degree, but this cannot be done after the child is 7 years old.
>
> "Exercises are of value, not to improve sight, but to relieve certain forms of eyestrain that may be due to an imbalance of the muscles that move the eyes. Each eye is moved in its socket by six different muscles. Between the twelve muscles involved, there is the most delicate balance imaginable, and in certain persons a lack of such balance produces the symp-

toms known as eyestrain. In a small percentage of such cases, the balance can be restored by carefully graduated exercises, carried out over a long period of time. But such exercises should be undertaken only on the advice of an oculist who has made the careful examination necessary and should be controlled by the oculist at stated intervals.

"Beyond these two conditions, exercise of the eye is of no value. When one stops to think that during every waking moment the eye is in constant motion and never rests on any one point for more than eight seconds consecutively, advising eye exercises falls into much the same category as advising a postman to walk for his health."

Another pertinent contribution to this subject, appearing editorially under the title, "Throw Away Your Glasses—A Fallacy," was as follows:

"In the September number of *Hearst's International* appears an article by W. H. Bates, M.D., entitled, 'Throw Away Your Glasses.' The author claims that by exercise of the eyes and of vision, combined with exposure of the eye to intense light, any eye with sight that is imperfect because of an error of refraction may be trained to perfect vision. Almost twenty years ago, according to available reports, Dr. Bates performed some experiments in a laboratory in New York City. The experiments were apparently limited in number, crude in technique, and extremely unconvincing in results. From these experiments Dr. Bates deduced the hypothesis that imperfect sight results from strain of the muscles that move the eyeball within the socket, and consequently all strain and imperfect sight may be relieved by rest and exercise. That this is manifestly an absurdity is patent to anyone with a knowledge of the anatomy of the eye and the laws of light. But the article is written with such an assurant note that it may sound convincing to one who lacks knowledge of the true conditions.

"It is very unfortunate that this article was given publicity. Much harm will be done by the blind acceptance of the dictum, 'Throw Away Your Glasses.' It is no doubt true

that some persons might discard their glasses without harm; but what about the near-sighted children whose nearsightedness, without proper glasses and supervision, will continue to increase to a point approaching blindness? What about the cross-eyed children whose defect could, in many cases, be relieved by proper glasses without resorting to surgery? What about those unfortunate victims of excruciating headaches whose pains are relieved only by properly fitted glasses? What about the patient with serious disease of the eye, manifest to him only by poor sight, whose vision could be saved by timely medical skill, but who is deluded by this article into the belief that his vision will improve with exercise, until it is too late and he is condemned to utter blackness for the rest of his life. That is the sad phase of the publication of such an article of untruths!"

The most recent comment, appearing editorially in *Hygeia*, on eye conservation fakirs, appeared in the current issue, under the title, "Unqualified Practitioners of Healing." It stated, in part:

"Recently there have appeared throughout the United States various concerns for the treatment of defects of vision. Some have been called The American Society for the Conservation of Vision. Thus the promoters have endeavored to conceal the fact that the practices carried on are for profit. Many of these shops have been promoted with the slogan 'Throw away your glasses and have perfect sight.' They have utilized the radio chiefly in securing their patients.

"One of the offices of the American Society for the Conservation of Vision was maintained in Milwaukee under the management of a man named Nickel. To that office came a woman, accompanied by a friend. The manager was introduced as 'Dr.' Nickel, and he undertook various examinations of the eyes of the two women. Then he provided them with charts containing dots and letters to be used as exercises for the treatment of the eyes. An investigation revealed that Nickel was not licensed in Wisconsin to practice either medicine or optometry and that he did not have the certificate of registration required under the Basic Science Act. Wisconsin

is one of the states in which the Basic Science Act provides a minimum standard of education for all who propose to heal the sick. The supreme court pointed out that Nickel had unlawfully treated the sick for a consideration, that the patients who came to him actually had diseases, that the methods which he used could be considered treatment of disease, and finally that Nickel had held himself out as a doctor and had not corrected the impression that he was a physician when introduced in that manner by the office attendant.

"The method which proposes to treat a defect of vision by exercising the eye and by discarding the lenses which have the value of making good the defect is like kicking the crutch from under a cripple who needs it to walk. Sometimes by an extraordinary effort the cripple can proceed without the crutch, but such effort is more likely to injure his weakened limb than to help it."

Accident Reduction in Industry.—Four important factors in the reduction of severity of industrial accidents are: (1) pre-employment physical examinations; (2) periodic physical check-ups; (3) adequate first-aid equipment and education; (4) competent medical attention. These four factors are particularly important in preventing eye casualties. Through pre-employment examinations in one organization, it was found that twenty per cent of the applicants were rejected on physical grounds, one-third of whom could not be considered for employment because of visual defects. Dr. J. J. Wittmer, writing for the July *National Safety News*, says, "Defective vision is not only a distinct hazard to the employee himself, but under many conditions, a menace to others." A rule which, stringently enforced, will prevent a large amount of visual impairment, is that which requires a complete ophthalmic examination after every eye injury, no matter how apparently trivial.

Medical Social Eye Service at the Presbyterian Hospital.—The practical importance of social work in connection with eye clinics is seen in the brief report of the social service department of the Presbyterian Hospital in New York City. During the past year, 823, or 11 per cent, of the clinic patients needed and benefited by

consultation with the social service worker assigned to eye service. The ramifications of eye problems extend in a widening circle through health, economic, educational and vocational agencies, with whom the medical social worker co-operates to assist the patient.

Prevention of Blindness in Certification of the Blind.—In the report on the work of the Glasgow Clinic for the certification of the blind, the interrelation between expert ophthalmic certification and the prevention of blindness is clearly brought out. In a statistical study of the causes of blindness registered and examined by the certifying board, it is seen that congenital and unknown causes of blindness are most prevalent. Under this head are included myopia, cataract and glaucoma; while the incidence of these eye diseases cannot be entirely prevented, early treatment may do much to conserve sight. Infectious and toxic diseases are next in importance, and accidental injury is the last category. The preventive aspect of such certification is seen in the case of 168 patients who had never before had skilled examination or treatment; of these, a substantial number could have had some sight saved had early treatment been instituted.

Headlights, An Unsolved Problem.—Although recently published statistics show that more automobile accidents occur in the late afternoon on clear, dry days than at any other time or under any other conditions, all drivers of cars will agree that their nervousness increases with night driving, when the glare of oncoming headlights makes road visibility problematic. William S. Canning, writing for the June issue of the *Keystone Motorist*, says that, while cars are becoming more mechanically reliable and road conditions safer, the headlight question has not advanced materially in the past ten years. No known headlight will penetrate fogs; while glare may be eliminated by having the headlights in perfect adjustment—perfectly aligned and the lamps at the exact focal point on the reflector—any maladjustment of the lamps or reflectors and any irregularity of the road surface will disturb this delicate balance and cause glare. The United States Bureau of Standards has made a study of headlights, with the following conclusions: the average headlight, horizontally thrown,

permits a visibility as far as three hundred feet ahead; when a car is coming from the opposite direction, the headlights from the oncoming car cut the road visibility to one hundred feet ahead; glare from opposing headlights is almost inevitable, and causes a momentary blindness. This blindness increases when the opposing headlights are of greater candlepower than those of the first car; frequent checking of the alignment of headlights is the only method of preventing excessive glare.

Preventing Blindness in Russia.—Along with the vast project of industrialization in Russia, and in many ways necessary for its success, is the program for the improvement in health and hygienic standards throughout the country. Current periodicals have shed considerable light on what is being done in that enterprising country for the prevention of blindness. According to Ida M. Cowley, whose visit to Russia is reported in the *New Beacon* for June 15, the latest census, dated 1926, gave the blind population as close to a quarter of a million,* 12.6 per cent of whom had been born blind. Glaucoma, trachoma and smallpox are the important causes of blindness in Russia, and it is considered that, conservatively speaking, 60 per cent of the blindness is preventable. An optimistic note is sounded in the report that blindness among children has been greatly reduced in the years from 1926 to 1930.

Russia is inquiring closely into industrial eye accidents. At the first All-Union Conference on Problems of Medical Expert Opinions of Disability, held in Narkomzdrav in 1928, a paper on "Some Problems in the Expert Examination of Eye Defects" shows the thoroughness of Russian industry's determination to protect the worker. The eye is studied in its six functions: visual acuity for far and near, peripheral, binocular and color vision, and light sense. Tables determine the loss incurred with an accident, and compensation is based upon these calculations and a careful analysis of the visual requirements of the worker's occupation; progressive myopia among those who perform close-vision tasks is considered an occupational disease.

Therapeutic measures for the prevention of blindness are also being studied, according to a note in the *Journal of the American*

* The 1931 census shows a blind population of 234,833.

Medical Association for July 23. Professor W. P. Phylatov of Odessa reports a technique for transplanting the cornea as a measure for the prevention of blindness.

The public health project for the second Five Year Plan is also reported in the *Journal*, and it may be interesting to know that this plan must completely abolish industrial accidents; that there will be an end to the so-called social diseases: typhus fever, typhoid, variola, trachoma, malaria and, partially, syphilis. In the socialistic town there will be no place for the development of rheumatism, tuberculosis, venereal diseases, or epidemics.

Prizes in Ophthalmology.—The prizes of 2,000 Swiss francs, for original work on the etiology of trachoma, offered a year ago by the Hungarian Minister of Public Welfare and Labor, have been awarded to Dr. Ugo Lumbroso, Tunis, and Dr. J. Taboriski, Palestine. Honorable mention was given to Drs. Cattaneo, Sassari; P. Olitsky, New York; Rotth and Kanyo, Budapest; and C. Trapezontzewa, Moscow.

The Fiske Fund prize has been awarded this year to Dr. Harry C. Messinger for his paper on "The Value of Ocular Signs and Symptoms in the Diagnosis of General Disease."

State and Provincial Health Authorities Issue Proceedings.—In the recent publication of the proceedings of the 1931 annual meeting of the Conference of State and Provincial Health Authorities of North America is found a summary of the work of the Committee on Conservation of Vision, recalling the contributions of this body to the White House Conference on Child Health and Protection, to the first Mexican Congress for the Prevention of Blindness, to the meeting called by the Secretary-Treasurer of the Conference, for a discussion of control of wood alcohol, and to the study now under way on the efficiency of silver nitrate.

Better Mine Lighting.—Higher standards of mine lighting have been proposed by the Mines Department of Great Britain, which, according to the American Standards Association *Bulletin*, exceed those of 1912 by about thirty per cent. The Safety in Mines Research Board and the British collieries are seeking to fix a higher lighting standard for new safety lamps, and to provide for gradual

displacement of the inferior lamps now in use; to require better maintenance practice in the colliery lamp rooms; to investigate the possibilities of extending the main lighting system to actual working faces, where possible; and to recommend the use of white or light-colored dust for rock-dusting mine workings, and to promote the practice now growing of whitewashing stations, pump rooms, haulageways, etc.

George Strong Derby Memorial.—In memory of the late Dr. George Strong Derby, a fund has been established and contributions are being received at the Massachusetts Eye and Ear Infirmary. Income from the fund will be used to carry on projects in which Dr. Derby was particularly interested. At present, the services of a social worker caring for glaucoma patients are being made available, partially by the fund.

Finding Sight Defects in Young Children.—Dr. Eva L. Roberts, assistant school medical officer, in England, has made a study of vision testing of school children which may prove to be revolutionary, according to a note in the May 28 issue of the *Medical Officer*. After an eye test with the Snellen chart, she recommends repeating the test with a plus-one-diopter sphere, held before the reading eye. Because 80 per cent of children are hyperopic, they will find the sphere an added comfort in seeing; those with so-called emmetropic eyes and those with a mild myopia will show a markedly lessened visual acuity, a danger sign of approaching myopia. This defect may then be corrected before it progresses to a more menacing point.

Home Lighting Problems Studied.—The General Electric Company at Nela Park, Cleveland, held a four-day institute on home lighting practice, from August 29 to September 1. Among the topics covered were: Seeing, Conserving Vision Through Better Home Lighting, and The Fundamentals of Lighting. Celebrating its twenty-sixth annual convention, the Illuminating Engineering Society will meet from September 27 to 29 at Swampscott, Massachusetts, to devote the major portion of its program to the study of lighting practice. Particularly interesting will be the laboratory session, at which M. Luckiesh and F. K. Moss will talk on "The Human Seeing Machine."

Ophthalmic Examinations.—The examination of the American Board for Ophthalmic Examinations will be held Monday, September 19, 1932, at Montreal, at the time of the meeting of the American Academy of Ophthalmology and Oto-Laryngology.

Cornell Clinic Moves.—The Cornell Clinic for persons in moderate circumstances will again open its doors on September 1, at the new medical center at York Avenue and Seventieth Street, New York City. The services of this clinic, which has been serving the people of New York for some ten years, will be merged with the out-patient service of the New York Hospital.

Prenatal Neglect is Seen After Eighteen Years.—The importance of early care of expectant mothers as a measure of blindness prevention is seen in the account, given by Noble Black in the May issue of the *Canadian Public Health Journal*, of a young woman who married and subsequently bore two children. Two years ago, the oldest child, at eighteen years of age, was found to be approaching blindness, due to congenital syphilis, while her sister, sixteen years old, is rapidly becoming a mental defective from the same cause. Routine Wassermann tests of every expectant mother would rule out such tragedy as this mother, herself innocent, inflicted upon her unborn children.

Ophthalmia Neonatorum Becoming Rare in England.—At the summer session meeting of the General Council of Medical Education and Registration of Great Britain, in a discussion of teaching diseases of the eye, it was noted that ophthalmia neonatorum cases are becoming rarities in general hospitals in England. In one district in London, Mr. Bishop Harman said, there had not been a case of ophthalmia neonatorum for several years. Those few cases that occur are immediately isolated in special hospitals, where the general medical student has little contact. Since ophthalmia neonatorum must be seen at first hand to understand its symptoms and treatment, the section on ophthalmology recommends that the study of this disease be undertaken at the same time as the study of fevers, as it is in hospitals for the latter that ophthalmia neonatorum patients are generally isolated. The consistent reduction in the number of cases of this disease leads

those interested in prevention of blindness to foresee the day when there will be no cases to be seen, and ophthalmia neonatorum will have become indeed a medical legend.

The Blind in Spain.—To the visitor in Spain remains the memory of blind beggars, blind street singers, blind lottery vendors, who haunt the main thoroughfares seeking coppers, and of the many more sightless of all ages who crouch apathetically in corners of public buildings, taking what charitable crumbs fall their way. The omnipresence of blind of all ages is explained by the late Dr. Miguel de Mérida Nicolich in the June issue of *And There Was Light*, published by the American Braille Press. Dr. Nicolich was the motivating force in Spain for care and education of the blind, as well as for prevention of blindness.

According to rough figures, 13 per cent of the Spanish blind are children under 16 years of age; 91 per cent of them are needy. Lack of homes and schools for the blind leave only begging and street selling open to these unfortunates as a means of livelihood; 93 per cent of the blind in Spain are illiterates. The percentage of blind in Spain is higher than in any other European or American country; there is one blind person to every 826 of population, or about 38,000 blind. Among the preventable causes of blindness are: ophthalmia neonatorum; gonorrheal ophthalmia; syphilis of the eye; trachoma, today as great a menace to Spaniards as it was when Napoleon's army brought the Egyptian scourge to Europe. Roughly, 70 per cent of the blind in Spain need not have been so.

The inadequacy of educational and training facilities for the blind in Spain, the lack of vocational training, and the disregard for any precautions to prevent blindness were seen and provided for in Dr. Nicolich's program for aiding the blind. That his death occurred at a time when a new government and a new freedom from religious supervision might have incorporated his program in the national progress was a blow to the blind. It's to be hoped that his interest, enthusiasm and foresight will be carried on by his friends as his memorial to the blind in Spain.

Trachoma in Manitoba.—A survey made in Manitoba in 1930 revealed that approximately one in every ten persons in the so-

called trachoma district showed symptoms of trachoma. In an effort to cure and prevent the spread of the disease, a traveling clinic is held in the infected areas, under the supervision of Dr. E. H. Alexander, an ophthalmologist, who has recently returned from study in Europe of methods of trachoma control. A recent report shows that from September to May of the past year over 2,000 visits were made to the clinic and 446 cases of trachoma identified and treated.

Chicago Abandons School Physical Examinations.—Health examinations of school children, long acknowledged by health authorities as the great field for preventive medicine among a portion of the population most susceptible to preventive handling, have been abandoned in Chicago. This results from the failure of the city to renew its appropriation for the maintenance of twenty-five school physicians and nurses. While some children receive medical attention and examination privately, the larger portion do not have physical examinations nor medical care except in emergencies. This action in Chicago is a setback in the campaign for early detection and correction of physical defects.

Lincoln's Eyes.—Physical characteristics play an important part in the determination of character and actions. A series of articles, "Lincoln and the Doctors," which is appearing in *Hygeia*, analyzes the physical history of Lincoln and explains many of his traits in terms of his physical condition. Particularly interesting is the chapter in the June issue, in which Lincoln's eyes are under discussion. We learn that Lincoln did not wear glasses until, when he was forty-seven, he "kinder needed spectacles," and made his selection from a tray of mixed spectacles. Much of the sadness of Lincoln's expression, says Dr. Milton H. Shutes, the author, was due not only to his sympathy with the sorrows of his people, but also to the fact that his left eye had a marked deviation from the right. Ordinarily, the eyes were brought into fusion but, on one occasion, Lincoln, wakening from a nap, saw a double vision of himself in a nearby mirror. His wife diagnosed the apparent apparition as a prophecy that he would be re-elected to the presidency, but that he would not outlive his second term. Ophthalmology has a more rational explanation: in his complete relaxa-

tion, his eyes, which usually made the necessary effort to function together, were working independently for a few seconds.

Child-Welfare News Summary Suspended.—To those in the field of child welfare and child health, the news that the *Child-Welfare News Summary*, published weekly by the Children's Bureau of the United States Department of Labor, is to be suspended for reasons of economy will be a matter of regret. This publication, which has summarized and abstracted books, articles and news, in the field of child welfare, has been of great assistance in evaluating and calling attention to articles in the American and European literature. The Children's Bureau hopes to prepare similar abstracts and reviews for occasional publication, so that this service, while curtailed, will not be entirely unfulfilled.

Making Silver Nitrate Foolproof.—The use of silver nitrate for the prevention of ophthalmia neonatorum is now practically universal, but it is by no means certain that the present methods of preparation of the solution or of its storage are ideal. For this reason, the Standing Committee on Conservation of Vision of the Conference of State and Provincial Health Authorities of North America, for which the National Society for the Prevention of Blindness provides the secretariat, is sponsoring an inquiry on silver nitrate, its preparation, storage and reactions to time and light. The most recent report of the investigation shows that beeswax is unsatisfactory as the ampule container; glass, eliminated because of the danger of breakage, also fails to prevent chemical changes in the solution when stored for a short time. Ampules composed entirely of hydrocarbons show a degree of stability which is now leading to a search for the ideal material of this nature for the storage and distribution of silver nitrate.

Ohio Regulates the Use of Fireworks.—A law limiting the sale, storage and use of fireworks has gone into effect in Ohio this year, according to a note in the *Ohio Health News*. Certain types of fireworks and toy explosives are prohibited, and others are limited in use. The note adds, "Moreover, in this time of economic depression, it would seem the part of good citizenship to devote the family funds to the things that are essential, rather than something

which dissolves in noise, smoke and smell, and may leave horrible death in its train."

Canadian Sight-Saving Class Teachers' Exchange.—Under the leadership of the prevention of blindness department of the Canadian National Institute for the Blind, a mimeographed periodical devoted to the interests of Canadian sight-saving class teachers has been inaugurated. The first issue, which appeared in June, carried a lively article on a sight-saving class in Montreal, as well as news of interest to teachers of partially sighted children. A second number will appear in October.

Eye Muscle Training Class.—The value of ocular muscle training for children with convergent squint is being demonstrated in Westchester County by the prevention of blindness department of the New York State Commission for the Blind. The present classes in White Plains and Tarrytown, with 25 pupils, ranging in age from 3 to 15 years, are to continue for four months; already improvement in fusion and vision is noted among the individual pupils. Miss Elizabeth K. Stark, who was technician in charge of the exercises, has concluded her work in order that she may visit the Maddox Clinic in England. Her place is taken by Miss Dorothy Behner, who plans not only to work with the classes, but to visit the individual homes further to gain the co-operation of the parents. Dr. Park Lewis writes: "The subject of the training of muscular imbalance and the development of amblyopic eyes is one I feel sure ought to receive more study than has been given it."

Improved Ophthalmoscope.—With the invention of the ophthalmoscope, seventy-five years ago, Helmholtz made possible the science and art of ophthalmology, which have advanced in such strides since his time. At the recent meeting of the American Medical Association in New Orleans, Dr. Jonas Friedenwald of Baltimore exhibited a refinement of the Helmholtz ophthalmoscope which will make possible the early discovery of diseases through eye symptoms, as well as the prompt recognition of diseases of the eye itself.

Trachoma Virulence in the United States.—According to a report in the *United States Public Health Reports* for May 20, while

there are nearly five times as many cases of trachoma in Kentucky as in Missouri, there is 150 per cent more blindness from this cause in Missouri than in Kentucky. Tennessee, which has 200 more cases than Missouri, has one-eighth the amount of blindness. No reason can be advanced for the difference in the virulence of the disease among people of relatively the same economic background.

Should Children Wear Glasses?—This question, which is answered thoughtfully by Dr. William H. Crisp in a recent number of *Colorado Medicine*, is one which is echoed by parents everywhere, particularly when there is question of eye difficulty in their own children. Dr. Crisp finds that children with visual defects should have glasses as soon as the defect is noticed; the slight handicap of glasses in play activities is more than compensated for by the help these same glasses give the intelligent child who would be unable with an uncorrected defect of vision to make the most of his opportunities at school. The fact that with drops and through subjective tests the eyes of very young children may be accurately measured should make physicians insist that all young children needing glasses wear them.

New Italian Journal of Ophthalmology.—A new journal, *Rassegna Italiana d'ottalmologia*, devoted to ophthalmology, has been initiated under the editorship of Professor L. Guglianetti of the University of Turin. Carrying original papers, reviews, abstracts and news in the field of ophthalmology, the magazine will appear monthly, or in a double issue bimonthly. That this is the fourth journal devoted to ophthalmological interests shows the activity now current in Italian clinics.

Prevention of Blindness in England.—Since blindness may have different causes in different communities, the Prevention of Blindness Committee of the Union of Counties Associations for the Blind, in England, is beginning with the blind themselves in their efforts to prevent loss of sight in the future. Following the Scottish system of certification of blind persons, the Committee recommends that everyone on the blind register be examined by competent ophthalmologists for the type of blindness and the initial cause of the condition. From this basis of the causes of

blindness, a thorough-going prevention program can be worked out to eliminate such causes in the future.

Spectacles Win.—That slight eye defects may have a great importance in our daily activities is the theme of a story by Dr. Henry G. Langworthy in the August issue of *Hygeia*. A lad whose drive off the tee was a "natural" was unable to sink his putts; a slight astigmatism and a sensitivity to light made it impossible for the player to get a line on the ball on the green. After correction of his eye difficulties, his putting fulfilled the promise of his drives, and the after-game headaches from eyestrain also disappeared.

Value of Physical Tests in Vocational Guidance.—It has been customary to consider aptitude tests and educational achievement tests part of any vocational guidance plan, but in France, where all pupils in technical schools are thoroughly examined, a complete physical test has proved valuable in placing young people in occupations. In one group of 146 pupils, 63 were found to have subnormal vision; many of these cases of eye difficulty were unknown by the pupils. Other physical reasons for changing occupational direction were tuberculosis and hyperhidrosis of the hands.

Eye Service in State Medicine.—Under the National Health Insurance Act in England, the insured person was entitled to ophthalmic service either from an ophthalmologist or a sight-testing optician. Naturally, because of the lower fees of the sight-testing optician most patients were sent to him. A recently organized National Ophthalmic Treatment Board recognizes the need for more than eye refraction in treatment of the eyes and, accordingly, has made provision, under the National Health Insurance Act, for those unable to pay private ophthalmic consultation fees. This move serves as a special protection for those whose symptoms may be impaired visual acuity, but whose difficulty lies in a deeper systemic involvement.

Is There an Optimum Line-Length in Reading?—Most of the pronouncements on the best length of line for reading have been arrived at arbitrarily, says Arthur I. Gates in the *Journal of Edu-*

cational Research for January, 1931. A controlled study showed that readers tend to accustom themselves to a particular length of line, but a group who had been presented with lines varying in length between four and ten inches read both extremes and the average lines with equal ease. He concludes, therefore, that additional evidence is necessary before standards can be adopted with full assurance of their validity.

Trachoma in the Argentine.—Trachoma has attained alarming proportions in the Argentine, according to Dr. Antenor Alvarez, who describes the demonstration for the prophylaxis of trachoma being made by the Argentine Red Cross and the Anti-Trachoma League at Santiago del Estero. Here, among the school children, an incidence of 14.72 per cent was found, and in the suburban schools it rose as high as 35 per cent. Efforts of those in charge of the demonstration are directed to encourage the state to take over the work of combating trachoma throughout the country and to improve the general living conditions and hygienic standards of the nation as a whole.

Special Education in Michigan.—Although the enrollment for special classes (for children who are crippled, deaf or hard of hearing, blind or partially sighted) in Michigan has increased during the past year, and supervisory services have expanded, the cost per capita of maintaining these classes has dropped, according to the annual report of the Division of Special Education of the Department of Public Instruction of the state of Michigan. One development in the effort to give handicapped children opportunities equal to those of their more fortunate brothers has been the move to return to the regular grades those children whose condition has been improved or stabilized to such an extent that they may profit from instruction with the regular grades.

Illumination, An Essential Requirement in Modern Plants.—Because of his eyesight, man continues to be more important in the producing world than the machines that seem to claim so many of his previous occupations. In the coal preparation plant, the sharp eyes of man are needed to grade the coal, yet, according to J. H. Edwards, in the August issue of *Coal Age*, a study of a new coal

producing plant showed that the illumination over the picking table was between one-and-a-half and two-and-a-half foot-candles —insufficient light for accurate seeing. Mr. Edwards finds that lighting is poor because the ease of its installation encourages the postponement of its planning until after the plant is built; then it is considered incidental, rather than one of the basic requirements of a good plant.

Books for Bed.—Many of us can recall the time, not so long ago, when reading in bed was frowned upon as hard upon the eyes and bad for the character. Today, it is recognized that a short period of reading is conducive to sound sleep, and the custom is so prevalent that the bedside book is receiving special study. The perfect bedside book, says William Lyon Phelps, in a recent issue of *Scribner's*, should be entertaining in content, without being exciting or stimulating. Physically, it should be light in weight, with dull paper, and printed in as large a type as possible. For full protection of the eyes, the National Society for the Prevention of Blindness recommends that bed-readers sit up to read with an adequate light coming from behind and above the head.

New Cinema Theatre Eliminates Eyestrain.—The old legitimate theatre was built with the idea that the front seats, nearest to the stage, were the most desirable, and the other seats were arranged in graduating upward tiers, to compensate, to some extent, for their distance from the scene. The opposite of this is true for motion-picture theatres, for the best seats are those in the center and back, while the front seats are so close that the picture is out of focus to those seated there. A new cinema theatre, built in New York City, has considered the perfect focusing of the picture from every seat in the house, and accordingly has built a parabolic floor, on which the front seats are somewhat raised for better vision.

National Society Notes.—The National Society for the Prevention of Blindness co-operated actively this summer, as in previous years, with universities giving summer courses for training sight-saving class teachers. Mrs. Winifred Hathaway, associate director of the National Society, served as special lecturer at Teachers College, Columbia University, New York City, in the course for

training sight-saving class teachers. Mr. Lewis H. Carris, managing director of the National Society, lectured to this group, as well as to sight-saving class groups at the University of Cincinnati, Cincinnati, Ohio, the University of Chicago, Chicago, Illinois, and State Teachers College, Buffalo, New York.

Mr. Carris participated in the thirty-first biennial meeting of the American Association of Instructors of the Blind. He spoke on "How May Our Schools Assist in the Prevention of Blindness?" and, at the evening session, on "One Hundred Years in the Education of the Blind." At the request of the National Rehabilitation Association, he will act as chairman of a session of its annual conference, on Co-ordination and Co-operation of Allied Organizations, to be held during its annual conference, October 9 to 12.

A series of radio talks on eye health, given with the co-operation of the New York Tuberculosis and Health Association, was broadcast by staff members of the National Society. Miss Eleanor P. Brown, secretary of the National Society, spoke on "To See or Not to See"; Miss Mary Emma Smith, director of nursing activities, gave the warning, "Prize Your Eyes"; Miss C. Edith Kerby, statistician, spoke on "Facts about Glasses"; Mr. David Resnick, director of publicity, talked on "Your Foresight Guards Their Eyesight." Co-operating with the New York State Department of Labor, Mr. Louis Resnick spoke on "Why It is Important to Have Good Light at Work."

Demonstrations of preschool vision testing were made by Miss Smith before students in summer schools at Teachers College, Columbia University, and New York University, New York City; The Johns Hopkins University, Baltimore, Maryland; Rutgers University, New Brunswick, New Jersey; Trenton State Teachers College, Trenton, New Jersey; and at Hyannis State Normal College, Hyannis, Massachusetts. Miss Smith also represented the Society at the annual meeting of the Conference of State and Provincial Health Authorities of North America, held in Washington, District of Columbia. Her plans for the coming season include participation in the Twenty-first Annual Safety Congress, at Washington, D. C., October 3–7. She was invited to present "The Contribution of the Nurse to the Conservation of Eyesight," during a joint meeting of the Industrial Health Section with the Industrial Nursing Section.

We are pleased to announce that Dr. E. V. L. Brown, of the Department of Surgery, University of Chicago, and member of the Board of Editors of THE SIGHT-SAVING REVIEW, and Dr. Le Grand H. Hardy, director of eye service at the Fifth Avenue Hospital, New York City, have recently accepted appointments as members of the Advisory Committee of the National Society.

Current Articles of Interest

The Etiology of Strabismus, Ralph I. Lloyd, M.D., *Archives of Ophthalmology*, June, 1932, published monthly by the American Medical Association, Chicago, Ill. The essential feature of human binocular vision is double retinal and double cortical representation, and, when this is lacking, diplopia results. The disparity of macular capacity has not been given the prominence that it deserves as a factor in squint, in the author's opinion. While muscle balance may be the cause of some slight cases of squint, the writer believes that the conflict of images takes place in the brain, and the most important prerequisite to the formation of a single image is approximately equal visual acuity.

The Trachoma Problem, F. D. McKenty, M.D., *Canadian Public Health Journal*, May, 1932, published monthly by the Canadian Public Health Association, Toronto, Canada. Although Canada is relatively little affected by the trachoma problem, the infectiousness of the disease and its serious prognosis when untreated make it a question of vital importance wherever a single case exists. The author reviews the trachoma problem—its distribution in all parts of the world, its probable etiology, its treatment and prognosis, and the measures which may be taken to prevent its spread.

Aberrations of Eyes and Lenses, Edward Jackson, M.D., *Journal of the American Medical Association*, August 6, 1932, published weekly by the American Medical Association, Chicago, Ill. A description of the irregularities of the eyeball, in relation to correcting lenses, leads to a plea for more careful prescribing and fitting of correcting lenses so as to eliminate the aberrations of eyes and lenses.

The Education of the Partially Blind, E. A. Whitfield, *New Beacon*, May 15, 1932, published monthly by the National Institute for the Blind, London, England. The elasticity of the definition of blindness in England permits partially blind children to be educated with and in the same manner as wholly blind children. This relatively small group of children (estimated in England as

about 7,000) cannot compete with normally sighted children in regular grades, while the type of education suited to the blind is totally unfitted to their needs. The problem of ideal education for these children still remains to be solved, although the path of instruction has been mapped out.

Changes in the Eye After Feeding Animals with Altered Vitamins, O. Katayama, *Acta Jap. Opth. Soc.*, September, 1931, abstracted in the *Archives of Ophthalmology*, June, 1932, published monthly by the American Medical Association, Chicago, Ill. The author conducted a number of experiments on rabbits, feeding them with beans heated to 120 and 130 C., thus altering the vitamins. He found (1) the cornea presented pathological changes and part of the epithelium desquamated and was destroyed; (2) the retina showed changes after thirty-five days; (3) the optic nerve presented marked changes. The longer the experiments were tried, the more marked were the resulting symptoms.

The Medical Examination of Domestic Servants, Charles V. Craster, M.D., *Public Health News*, May–June, 1932, published monthly by the Department of Health of the State of New Jersey, Trenton, N. J. An account is given of the work being done under the auspices of the Newark Department of Health in medical examination of domestic servants, similar in scope to that for general food handlers, to safeguard those in the home from contact with tuberculosis, typhoid, venereal disease, and other communicable diseases.

Notes on Muscle and Fusion Training and Orthoptic Treatment of Motor Anomalies, Otis Wolfe, M.D., *American Journal of Ophthalmology*, July, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. The author describes a series of cases in which a functional element was the causal factor in producing nervous conditions and symptoms of eyestrain. Orthoptic exercises along with other treatment are therapeutic measures of merit, producing direct retinal and cerebral stimulation, along with an unmeasurable amount of psychic effect.

Asthenopia, a Psychoneurosis and a Medical Responsibility, C. W. Rutherford, M.D., *Journal of the American Medical Asso-*

ciation, July 23, 1932, published weekly by the American Medical Association, Chicago, Ill. The author finds that a close relationship exists between disorders of the nervous system and of the eyes. Many patients, complaining of eyestrain, show no refractive errors, or extremely slight deviation, yet they need the greatest attention from the ophthalmologist, who can make their vision comfortable and dispel, to some extent, the psychoneurosis. The paper emphasizes the fact that refraction is no mechanical performance, but an art practiced upon the whole patient.

The Industrial Ophthalmological and Compensation Problem, J. Guy Jones, M.D., *Texas State Journal of Medicine*, July, 1932, published monthly by the State Medical Association of Texas, Fort Worth, Texas. In reviewing the problems of industrial compensation for ophthalmological injuries, the writer finds that labor is receiving good medical treatment in the majority of cases, although compensation might be greater. Because of the feeling of mistrust between the insurance company and the injured, a full physical examination before employment would rule out much unfairness on both sides.

Nasal Sinusitis and the Eye, E. Watson-William, F.R.C.S., *Lancet*, July 9, 1932, published weekly by The Lancet, Ltd., London, Eng. Case reports of patients whose eye difficulties did not improve until after treatment of the sinus infection show the importance of early study of sinus conditions in stubborn eye cases.

New Data on the Typography of Textbooks, B. R. Buckingham, *Thirtieth Yearbook of the National Society for the Study of Education*, 1931, published by the Public School Publishing Company, Bloomington, Ill. Limiting his research to defining the ideal typography for early readers, the author finds that the school administrator must consider the ideal type and set-up not only from the point of view of readability, but also from the angle of the purchaser of books. The correlation between readability and production costs is shown.

Manuscript Writing, Jennie Wahlert, *Childhood Education*, June, 1932, published monthly by the Association for Childhood

Education, Washington, D. C. After a seven-year period of observation, the writer finds that manuscript writing, particularly for beginners in reading and writing, is an easier medium of expression than cursive, that the children using manuscript writing improve in legibility more rapidly, and that there are no writing failures under this system.

Monocular Cycloplegia for the Control of Myopia, W. H. Luedde, M.D., *American Journal of Ophthalmology*, July, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. If convergence of the eyeballs during close work is one of the conditions conducive to myopia, the relief from the necessity of such convergence should prove a check to the myopia. Based on this hypothesis, case records over an eight-year period show that myopia was treated through monocular cycloplegia over intervals, resulting in arrest of the condition.

The Ophthalmologist and the Lighting Problems of His Patients, Walter B. Lancaster, M.D., *Archives of Ophthalmology*, July, 1932, published monthly by the American Medical Association, Chicago, Ill. Poor lighting may be divided into two classes: that which is obviously insufficient or lacking in one way or another, and that which might suffice for the strong, healthy eye, but causes conjunctivitis and other disagreeable symptoms in weaker eyes. The ophthalmologist, to be of greatest service to his patients, should recognize poor lighting and understand the problems of lighting sufficiently to be able to help his patients correct their home lighting environment. This article is a comprehensive and concise statement of the lighting problem applied to everyday life.

There is Only One Side to the Goggle Question, Harry Guilbert, *National Safety News*, April, 1932, published monthly by the National Safety Council, Chicago, Ill. The responsibility for complete eye protection rests with the executives of any plant, says the safety director of The Pullman Company, and, where the wearing of goggles in all parts of the plant is mandatory, the ruling applies equally to the president of the company and to the newest workman. When the wearing of goggles at all times, by everyone, is enforced, there is no danger of eye accidents. Men will more

deeply appreciate the need for wearing goggles when the enthusiasm for eye protection comes from the president, the executives, the directors and the foremen.

Vitamin A, Lafayette B. Mendel, *Journal of the American Medical Association*, June 4, 1932, published weekly by the American Medical Association, Chicago, Ill. The first of a series of articles on present-day knowledge of vitamins, this paper traces the history of the recognition of vitamin A, the characteristics manifested when it is absent from the diet, its incidence in foods and its function. Lack of this vitamin will cause ophthalmia in young rats, which it will cure when restored to the diet. Vitamin A is found abundantly in butter, cream, milk, eggs, cod liver oil, carrots, spinach and watercress.

A Century of Service: The Story of the Wills Eye Hospital, Madelin Blitzstein, *Hygeia*, August, 1932, published monthly by the American Medical Association, Chicago, Ill. On the occasion of the one-hundredth anniversary of the Wills Hospital and its move to a modern building, it is timely to look back over the history in ophthalmology which this institution has made in the past century.

Glareless Lighting for Hospital Wards, C. E. Ferree and G. Rand, *Modern Hospital*, June, 1932, published monthly by the Modern Hospital Publishing Company, Chicago, Ill. In a study of the problem of hospital lighting, the writers have found that ceiling fixtures should illuminate the working plane with a comfortable distribution of brightness in the field of view; such fixtures should shield the eye from glare; the beam which comes from the ideal ceiling fixture directly upon the working field should be diffused. Descriptions and drawings of an ideal ceiling fixture, with bright-light and twilight attachment, are given.

Handwriting, Frank N. Freeman, *Review of Educational Research*, December, 1931, published five times a year by the American Educational Research Association, Washington, D. C. Reports of educational and psychological studies of children's handwriting, discuss the relative merits of manuscript and cursive

writing, the relationship between mirror writing and left-handedness, and writing abnormalities.

Inexpert Refraction, John Green, Jr., M.D., and Carl Beisbarth, M.D., *Journal of the American Medical Association*, July 9, 1932, published weekly by the American Medical Association, Chicago, Ill. The eye, as the organ of vision, must see accurately, and this paper makes a plea to ophthalmologists for conscientious, careful refraction for visual defects. Technics and procedures for refraction of the eyes, at all ages, are clearly outlined.

The Mechanism of Vision. V. The Structure and Image-Forming Power of the Rat's Eye, K. S. Lashley, *Journal of Comparative Psychology*, April, 1932, published bimonthly by the Williams and Wilkins Company, Baltimore, Md. While previous studies of the vision of rats suggested that visual acuity was almost lacking, this investigation shows that the rat has a fairly effective detail vision, with an acuity about one-fiftieth to one-twenty-fifth that of man, and ability to discriminate complicated patterns above this threshold. Reviewing the results of the present study, we find that the eye represents a fairly efficient optical system, conforming in its possibilities to the actual findings in recent tests of visual discrimination.

Trachoma and Trichiasis Among the Greeks, A. Gabriélidès, *Revue Internationale du Trachome*, April, 1932, published quarterly by the League Against Trachoma, Paris, France. Trachoma, an eye disease known and written about by Egyptian ophthalmologists, was an important eye disease among the Greeks. Although the Greeks had no ophthalmic specialty in medicine, they surpassed the Egyptians in their knowledge and skill in curing eye diseases, and their literature tells of the symptoms, the frequency, the cause (it is interesting to note that they felt that trachoma came from dust, smoke and irritating vapors), and the treatment, much of which is still practiced.

Researches on the Follicular Diseases of the Conjunctiva, Prof. Dr. C. Pascheff, *American Journal of Ophthalmology*, August, 1932, published monthly by the Ophthalmic Publishing Company,

St. Louis, Mo. Follicular disease of the conjunctiva is classified, and, from clinical and histological characteristics of each form of the disease, four laws of trachoma are formulated: (1) there is no trachoma without follicles; (2) the trachoma follicle is confluent; (3) the folliculoma of trachoma can develop on the conjunctiva as well as on the cornea; (4) true trachoma finally passes into spontaneous cicatrization or hyaline degeneration. The conclusion is drawn that trachoma is an endogenous disease, characterized by constitutional lymphadenoid vegetation of the conjunctiva.

Clinical Features of Vitamin A Deficiency, George B. Eusterman, M.D., and Dwight L. Wilbur, M.D., *Journal of the American Medical Association*, June 11, 1932, published weekly by the American Medical Association, Chicago, Ill. A study of vitamin A from compiled literature on the subject shows its nature and sources, and the effect of a diet, continually deficient in this essential food factor, upon the eyes, the respiratory tract, the alimentary tract, etc. Treatment for vitamin A deficiency is suggested.

Two Circle Grid Charts for Measuring Visual Acuity and Astigmatism, Edward B. Greene, *American Journal of Ophthalmology*, August, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. A list of variable factors in the visual acuity test situation was used as the basis for drawing specifications for a series of ideal test objects. Two charts, for use at six meters and at thirty centimeters, are illustrated; it is claimed that they test, simultaneously, visual acuity and astigmatism, that they are scarcely affected by difference in mental ability or language comprehension, and that they may be used by persons having a mental age of four years.

Ophthalmology in the Health Examination, John N. Evans, M.D., *New York State Journal of Medicine*, July 15, 1932, published twice a month by the Medical Society of the State of New York, New York, N. Y. One of a series of brief notes on the specialties in general health examinations; the author claims that the ophthalmological examination supplies general health information comparing favorably with the finest of laboratory data.

Good Lighting, W. E. Clemson, *Factory and Industrial Management*, August, 1932, published monthly by McGraw-Hill, New York, N. Y. Refuting the statement that good lighting is not generally found in factories where heavy manufacturing is carried on, nine interior views of factories are shown where the lighting is well conceived and executed to improve visibility and to prevent accidents.

Book Reviews

MEDICAL SUPERVISION AND SERVICE IN INDUSTRY. New York: National Industrial Conference Board, Inc., 1931. 125 p.

This is a revision of two previous studies published by the National Industrial Conference Board and has the advantage of comparing statistics which were previously compiled with important new material.

A special feature of the study is the inclusion of 53 per cent of the companies employing less than 1,000 employees.

As the monograph states, "A gradual shifting of emphasis from the curative phases of medical care to preventive work and health education is evident. With this development have come corresponding changes in the personnel and equipment of medical departments and in the average cost per employee. Aside from the sociological benefits resulting from the improved medical care of the employees, there has been a reduction of compensation costs and of waste involved in excessive labor turnover, absenteeism, and low labor efficiency."

The chapter headings indicate fairly well the scope of this publication: "The Place of the Medical Department in Industry"—"Staff and Equipment"—"Physical Examination of Employees"—"Industrial Accidents and Their Treatment"—"Diagnosis, Treatment, and Prevention of Illness"—"Medical Work in the Small Plant"—"Medical Records"—"Analysis of Work of Medical Department"—"Cost of Medical Supervision and Service"—"The Value of Medical Work in Industry."

A valuable addition is the appendix, which includes routine and standardized procedures in physical examinations, first aid treatment, a standardized medical terminology, and last, but not least, the estimated value of medical service in a company of 500 employees.

This is a valuable reference work for anyone who has to do with industrial health and safety in any of its aspects.

Except for mention of the technique for the examination of vision in industry, and a statement concerning the employment

of oculists, this book does not go into the subject of the prevention of blindness and the conservation of sight.

C. O. Sappington, M.D., Dr. P. H.

Briefer Comment

Manual of Public Health Nursing. Prepared by the National Organization for Public Health Nursing. New York: The Macmillan Company, 1932. 253 p.

This is the second and completely revised edition of the *Manual*, intended "to suggest procedures which may serve as a guide primarily to the nurse in the field, and which may be applied to county, small community, state or large city services." It is a comprehensive handbook containing definite information on every phase of public health nursing. Suggestions for eye care are made throughout, beginning with the care of the eyes at birth and during the postpartum period, the importance of detecting and correcting squint and other visual defects during the preschool age, the technique in detail for making vision tests, lighting in the school and industry, and first-aid treatments for the removal of foreign bodies in the eye. Gonorrheal ophthalmia neonatorum is discussed with other communicable diseases; it is pointed out that six out of ten cases of ophthalmia neonatorum are due to the gonococcus. Perhaps there should also have been a mention made of the danger from secondary infection, and the absolute necessity for immediate and thorough medical and nursing care in order to prevent blindness or loss of sight, regardless of the type of infection. Nurses in many parts of the country might have found a paragraph on trachoma helpful.

The *Manual* is an excellent production, a great improvement on the first edition and is sure to be of great assistance to all public health nurses, but particularly to those who work alone.

Proceedings of the National Conference on College Hygiene. New York: National Tuberculosis Association, 1931. 88 p.

"How can a college hygiene program best be organized and operated?" was the question confronting the President's Committee of Fifty on College Hygiene, when they met at Syracuse in

May, 1931, with representatives of the National Health Council and the American Student Health Association. Dividing their reports into four sections, Health Service, Health Teaching, Organization and Correlation of Factors in College Hygiene, and Special Problems, they have set down criteria that apply equally to the large and the small institution. Among the special problems are: sex education and social hygiene, the prevention and control of tuberculosis, mental hygiene, extra-curricular activities and conditions, and nursing problems. Although this book is primarily a foundation for a college health program, its precepts should have a constructive effect upon the health of a new generation, of whom today's college students will be the parents.

THE HEALTH OF THE SCHOOL CHILD, A STUDY OF SICKNESS, PHYSICAL DEFECTS AND MORTALITY. Public Health Bulletin No. 200. Washington: United States Treasury Department, Public Health Service, 1931. 159 p.

In a study which has taken several communities as typical of the nation as a whole, the figures that have to do with diseases of the eye and eye defects are of particular interest to those concerned with the prevention of blindness and the conservation of sight. While the study makes no attempt to draw conclusions, some of the facts are pertinent:

Eye diseases in these communities were nineteenth on the list of reasons for school absences; vision defects, on the other hand, were second on the list, with 32.46 per cent of the children showing refractive errors varying from a slight degree to definite visual handicaps; 19 per cent of the children had vision defects so great as to need correction; eye defects were more frequent in girls than in boys, as 15 per cent more girls than boys had seriously defective vision. According to these figures, more than 90 per cent of the children entering school have hyperopia to a mild degree, this defect decreasing with age, while myopia increases rapidly up to the age of 12. Strabismus is more prevalent in the lower grades than in the upper, probably because a cosmetic correction is made during the early school years through glasses or operation.

Books for Tired Eyes. Charlotte Matson. Chicago: American Library Association, 1931. 59 p.

For the many people who find the ordinary book an eye-fatiguing chore, this list of books printed in large legible type will be most welcome. More gratifying even than the length of the list is its cosmopolitan selection, with books to appeal to every reader—fiction, travel, biography, poetry and history books, printed in 12-point type or larger. Many of these books kept in the hospital or convalescent-home library would mitigate eyestrain without depriving patients of the privilege of reading.

Public School Education of Atypical Children. Bulletin No. 10, Robert W. Kunzig. Washington: United States Government Printing Office, 1931. 160 p.

The White House Conference, which called together the authorities on special care for handicapped children, as well as those for the normal care of normal children, and its reports have aroused interest throughout the country in the question of equal opportunities for all children. This particular study analyzes the opportunities offered in the public school systems in states with cities of over 100,000 population, indicating (1) state control of special education; (2) the nature of state aids; (3) the trend of legislation; (4) the administration of state control of special education.

A second study is made of the organization and working of such classes in cities of over 100,000 population, as typical of the local situation in these states. The cost of special education to the states and the local centers is analyzed and comparisons made.

Education in Belgium. James F. Abel. Washington: United States Government Printing Office, Bulletin No. 5, 1932. 145 p.

A study of educational organization, administration, methods and principles in Belgium; an interesting note is struck in training teachers to teach hygiene by taking care of their personal health. Ability to detect defects, through observation and testing, is part of each elementary teacher's requirements.

A Survey of Health Organization and Service in Ontario County, New York, 1930. Allen W. Freeman, M.D. New York: State Charities Aid Association, 1932. 90 p.

Co-operation in services, on the part of educational, nursing and hospital authorities, is the basis of the well-rounded health service described in this survey, which was made at the request of the State Charities Aid Association and the New York State Department of Health.

Twelfth Annual Report of the Industrial Health Research Board to the Medical Research Council. London: His Majesty's Stationery Office, 1932. 57 p.

A non-technical report of the work of the Industrial Health Research Board towards the solution of the human problems created by modern industrial conditions. Of special interest to readers of the Sight-Saving Review are the discussions of research in relation to lighting and output, fatigue, eyestrain and psychological factors.

Annual Report, Eastern Association on Indian Affairs, 1932. 14 p.

As a summary of the year in vocational projects and social and health activities among the Indians, this report indicates to what extent the present economic depression will affect future health. Less ready markets for the craft products of the Indians, widespread unemployment and budget reductions are causing immediate distress; the energy of those in charge of Indian affairs must compensate for the coming decrease of $1,000,000 in health appropriation and the one-third cut in the fund for a clinical survey of trachoma, tuberculosis and venereal disease among these people.

Contributors to This Issue

Dr. Luther C. Peter, professor of ophthalmology, Graduate School of the University of Pennsylvania, is the author of several texts, namely, *The Extra-Ocular Muscles* and *The Principles and Practice of Perimetry*. His international reputation as an authority on squint is evidenced by the invitation accorded him to address the Oxford Ophthalmological Congress in July on "The Treatment of Non-Paralytic Squint."

Mrs. Winifred Hathaway, as associate director of the National Society, needs no introduction to anyone concerned with sight conservation. Her special concentration on the development of sight-saving class work fits her singularly for the subject with which she deals in this issue.

Dr. Park Lewis, who has contributed previously to THE SIGHT-SAVING REVIEW, is recognized as an active participator, nationally and internationally, in the work of prevention of blindness. Although a busy practicing ophthalmologist in Buffalo, N. Y., he finds time to act as vice-president of the International Association for the Prevention of Blindness, among his other altruistic activities.

Mr. Lewis H. Carris is managing director of the National Society for the Prevention of Blindness.

Dr. Frank H. Rodin is instructor in ophthalmology at the Stanford University Medical School, and chief of eye service at that clinic and at the Mt. Zion Hospital. His special contribution to the work of the San Francisco Department of Health is the supervision of the sight-saving classes in the public schools, and the examination of all school children with markedly defective vision.

Mr. Louis Resnick, formerly editor of the *National Safety News* is director of industrial relations of the National Society.

Our book reviewer, **Dr. C. O. Sappington,** is director of the division of industrial health of the National Safety Council.

Will History Repeat Itself?

Shirley W. Wynne, M.D., Dr. P. H.

WHAT New York City has done in the past 30 years to prevent eye diseases among children is related here. The economic depression threatens, however, to undo much of the good accomplished—for widespread malnutrition endangers the children's eyesight

THIRTY years ago the Department of Health began its work among the school children of New York City to check the prevalence of infectious eye diseases, especially trachoma. A hospital and a dispensary had to be established by the Department to take care of the tremendous number of children needing free treatment because, at that time, facilities for giving free treatment to the general public were taxed to the limit in both public and private hospitals.

Today we have reached the point where infectious eye diseases have been so reduced that free treatment of school children by the Department of Health is not needed or advisable. All children needing such services can be cared for by non-department free clinics.

Just how has this change come about?

Perhaps the history of a community can be written in terms of the health of children's eyes. At least, in New York City something like this can be done for the last thirty years.

In 1902, when the first Department of Health eye clinics were organized, we had a large immigrant population. Whether or not trachoma was imported from Europe by some of these people, the fact remains that it had ample opportunity to spread among families huddled in crowded tenement dwellings with few facilities for individual life and cleanliness.

To this is added a fact of significance in the light of our present knowledge of nutrition and its relation to eye health. Here were people from nearly every country of Europe, but especially from the rural sections of Eastern Europe. Transplanted from their native environment, many of them were deprived of some of the foods that had been a normal part of their dietary for generations. Working for low wages, their tendency was to cling to the cheapest foods that they were used to, and to supplement them with the cheapest foods available here. Without experience with the foods which should make up their diet, they often left out the foods which experience has shown are essential to the best nutrition.

All of these conditions were reflected in the trachoma situation in the schools. One of the oculists in the first Department of Health clinic remarked just the other day, "In one school of 4,000 pupils, there were 800 cases of trachoma. You cannot find that many cases in the entire city today." Among the children using the public baths, 12 per cent were found to have trachoma and were excluded from the use of the baths to prevent the spread of the disease through these channels.

During the first years of this work, a very careful technique for the treatment of trachoma was built up. Sulphate of copper was found to be the most reliable application for medical treatment. As for the surgical treatment of trachoma, among the 20,000 operations done in the Department of Health Trachoma Hospital, only one eye was lost, and that was traced to a streptococcus infection due to insanitary home care.

Other eye infections were treated with success, both at the dispensary and at the hospital. This experience led to the Department's action in regard to ophthalmia neonatorum, infection of the eyes of the newborn. In 1905, instructions went out to all midwives on the use of Credé's solution of silver nitrate in the eyes of all newborn infants, and, further, midwives were required to report all cases of "sore eyes" to the Department of Health, so that a medical inspector could give immediate treatment.

Some time before this, in 1903, tests were made of vision among pupils in the vacation schools and it was found that 30 per cent of these children did not have perfect vision in one or both eyes. The oculists who made this study stated that ". . . by the early

detection of cases of hypermetropia, the number of cases of myopia, produced by straining of the accommodation, will ultimately be diminished in this city." So was born another branch of the sight conservation work of the Department of Health—the prescribing of glasses for school children needing them but unable to go to a private oculist.

In 1908, when the Bureau of Child Hygiene was established, the pioneer work of the preceding years became crystallized in a city-wide plan, with eye clinics at convenient places to care for the school population. The first full annual report of that Bureau—for the year 1909—recorded 45,615 cases of trachoma and 49,807 cases of conjunctivitis treated. The next year showed the number of cases of both these diseases to have been reduced to about half that number. In 1911, there were but 15,000 cases of trachoma treated in the Bureau's eye clinics—one-third the number treated in 1909—and about 26,000 cases of conjunctivitis.

The reduction of trachoma cases continued steadily until, in 1928, there were but twenty cases treated in Department of Health eye clinics. The situation had changed also in regard to other eye infections. The vigilance of school nurses and teachers made it possible to get a case cared for before there was need of intensive treatment.

In the meantime, the work of the eye clinics had developed phenomenally along the lines of prescribing glasses for school children whose parents could not afford to send them to an oculist. Clearly the time had arrived to change the Department's policy regarding its eye clinics. This change was required both by the conditions with which we were dealing and by the demands of economy. In May, 1931, our eye clinics ceased to give medical or surgical treatment and were given over entirely to the correction of defective vision. All the medical and surgical treatment of eye diseases could be handled by private oculists or, when the children came from poor families, by established eye clinics in hospitals.

How small a part of the work of the Department's eye clinics the medical and surgical treatment of eye diseases had become, is revealed by these figures. In 1930, about 20,000 children attended the clinics both for this type of treatment and for refractions. In

1932, the first eleven months, 18,129 children attended the clinics for refractions only. Admitting that due to depression conditions there has been a slight increase among the children coming to the free clinics for prescriptions for glasses, still it can be seen that the work has been preponderantly along these lines.

This tendency is also reflected in the history of the work for the blind and for those with poor vision in the public schools of the city. From 1909 to 1913, these special classes, eighteen in number, were organized for the blind, although a few partially sighted children were included. Ophthalmia neonatorum was the leading cause of the blindness among these school children; trachoma also played an important rôle among the causes of blindness. After 1913, the intensified campaigns against these two diseases were reflected in the diminished numbers in the classes for the blind. Today, there are but 82 students enrolled in the public school classes for the blind, while the two classes for sight conservation started in 1914 have expanded to 89 classes with 1,680 students enrolled. Myopia, hyperopia and astigmatism lead as causes for such poor vision that a child must be taught in one of these classes. In other words, in viewing the chief causes for inclusion in special classes, we find that the emphasis has shifted from eye disease to errors of refraction.

By controlling certain formerly widespread infectious diseases, other eye conditions have been revealed in their truly serious light. It reminds one of that old fairy story in which a peasant made a magic wish that he should be relieved of his toothache, only to find that he was more acutely conscious of his aching feet.

So far I have dealt with the trend of the last thirty years. But these years of depression may change this trend. Some authorities on diseases of the eyes view with alarm the possible consequences of malnutrition and poorer living conditions among those affected by unemployment. Will there be a return to the conditions of 1902?

We have just compiled the statistics regarding the medical examinations of school children during the first three quarters of 1932, and find that the proportion of children suffering from malnutrition has continued to increase. During the years 1927, 1928 and 1929 the percentage of such children was quite stable, averaging

13.5. In 1930 the figures for the city as a whole rose to 16.1 per cent; in 1931 the rate rose to 17.0 per cent and for the first nine months of 1932 it has increased still further to 17.7 per cent.

There is no doubt that the increase in the prevalence of malnutrition in school children is the result of the severe economic depression. The analysis of the figures indicates that remedial measures should be concentrated on the boroughs of Manhattan and the Bronx. Unless a marked improvement can soon be brought about we shall pay the penalty in increased sickness and deaths among our younger generation. The situation calls for liberal support of all the welfare agencies now dealing with relief for the victims of the depression.

With this in mind, the Department of Health has made every effort during the past year to spread education on the fundamentals of an economy diet. Our nurses in the schools and clinics have received special instructions regarding nutrition and have made great progress in teaching the people with whom they come in contact how to get the food elements they need even though their food must be cheap.

This, combined with a more widespread knowledge of personal hygiene than the general population had in the early years of the century, builds a more substantial foundation for general health and for the health of the eyes than we had thirty years ago. In addition, we have the rigorous routine of school medical inspection to guard against outbreaks of eye disease; we have the work of well-trained midwives in preventing "sore eyes" among the babies whose births they attend; we have eye clinics to take care of children whose vision needs correction and who must get these services without charge—all new and developed within the first three decades of the century and all aimed at preventing history from repeating itself.

Vision Testing for the Young Child

Mary Emma Smith, R.N., and C. Edith Kerby

A recent survey reveals that one out of every 25 preschool children in the country has a vision test as a part of the physical examination, and that vision testing of this age group has been started in 46 states

"THE 'E' game is a great help in discovering vision defects before children start to school."

"We found that one child whom we had considered a mental case had less than 20/200 vision."

"We began this work as an experiment and found so many visual defects that we realized its importance."

"I regard it as a *sine qua non* in the examination of preschool and first-grade children."

Statements such as these suggest the importance that is attached to vision testing for young children by leaders in the field of health supervision. They are typical of some of the comments made by persons who replied to our questionnaire on the subject of vision testing for the young child. This questionnaire, which was sent out by the National Society for the Prevention of Blindness, was addressed to organizations doing health supervision of young children throughout the country in an attempt to discover to what extent local communities have incorporated vision testing into their programs.

It is to be generally understood that vision testing, as herein discussed, is considered a screening process whereby children seeming to have visual defects are selected for a careful examination by an eye physician.

The mailing list of organizations consisted largely, but not entirely, of official health and education departments. The original list was furnished by the National Organization for Public Health

Nursing, this being supplemented by a list of similar organizations located in communities in which demonstrations of vision testing for small children had been given by members of the staff of the National Society for the Prevention of Blindness. A total of 3,105 questionnaires was mailed and 1,720, or 55 per cent, were returned. When one considers that there was no follow-up correspondence to bring in the schedules and that the Society has no official connection with the local organizations addressed, the percentage of returns is very good and undoubtedly indicates a real interest in this subject on the part of workers in these organizations. The Society appreciates the interest and co-operation shown by those who have made this study possible.

The findings of the present report are, to be sure, somewhat incomplete. However, it is felt that a large proportion of the organizations failing to reply did so because they were not carrying on any work in this field. Summary figures in the following analysis include only organizations and counties actually reporting; no attempt has been made to estimate the extent of the practices in places from which reports are missing or incomplete.

Counties Doing Testing

A check-up of returns by counties shows that vision testing of the child too young to know his letters has been incorporated into health supervision programs of one or more organizations in one out of four counties in the United States. Of the total 3,099 counties* in the entire country, 443, or 14.3 per cent, start vision testing with the preschool age; and 333, or 10.8 per cent, start with children in the first grade. The list of counties in which some testing of preschool children is being done includes counties from every state except Utah and Nevada.

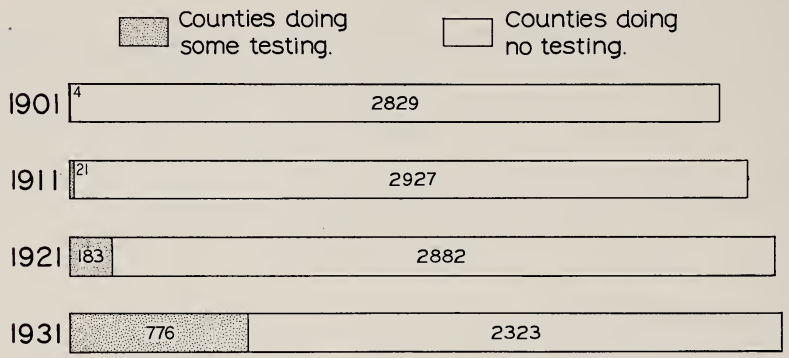
When Vision Testing of Young Child Began

As in the case of most preventive health work, the entire development has occurred since the opening of the present century, most of it within a comparatively few years. If the dates on the returned schedules are accurate, there were only four counties

* Following the policy of the Bureau of the Census, we are including as counties those cities and other population units having the status of counties.

doing vision testing of the young child in 1901; by 1911 there were 21; in 1921, 183; and in 1931, 776. During the period between 1925, when the National Society for the Prevention of Blindness first became interested in the development of this program, and 1931, the number of counties making vision tests has more than doubled.

Growth in the Number of Counties Doing Vision Testing of the Young Child



Approximate Proportion of Children Reached

In the above figures showing the proportion of counties doing vision testing, the picture is over-optimistic, since, as stated, a county is credited as having made a start if only one organization is doing some testing. When allowance is made for the proportion of children actually tested, the figures are much less favorable. For example, we find that comparatively few communities are reaching as many as half of the available preschool (four- and five-year-old) children. In 14 states not a single county is reaching 10 per cent of this age group. Communities in which some testing is done may constitute only a small portion of the population of the county, and the population of counties doing some testing is a comparatively small part of the entire state in most instances. The net result is that the proportion of preschool children in the entire country having a vision test in 1931 is estimated at less than

four per cent. Even the most active states are not reaching more than 10 per cent, as will be seen in the chart showing the ranking of the states.

It is evident from the questionnaires that the proportion of first-grade children reached is very much higher, although the fact that actual figures for the number of school children tested could not be given by grades in many instances makes an estimate of this total unreliable.

Reason for Starting Preschool Eye Testing

The National Society for the Prevention of Blindness, which had for some time felt that if attention could be given to detection of eye defects in children of preschool age the eye faults found at school age might be decreased, began in 1925 to put its theories to a test. At that time an arrangement was made with leading ophthalmologists in New York City to make eye examinations of groups of kindergarten children at the time of their health examinations. The plan had a twofold purpose: first, to give health service of a type that had hitherto been overlooked; and second, to obtain statistical data which would indicate the extent of the need for such eye examinations.

In this experimental stage, the services of the ophthalmologists were given free; during the course of the study it became evident that if any considerable number of children were to be reached, it would be necessary to evolve a plan, similar to that used in school eye inspection, for screening out or selecting the children who seem to be in need of the attention of an ophthalmologist. This, in turn, led to the employment of an experienced public health nurse to work out an improved technique of vision testing particularly adapted to the needs of the little child. One of the by-products of the project was the selection of the Snellen test card using the symbol "E" in various positions, as the one chart, among all the so-called illiterate charts tried out, which was suitable for the purpose. Finding that none of the Snellen "E" charts available for sale quite met the standards of accurate measurement or the requirements as to spacing, surface texture, etc., the National Society for the Prevention of Blindness later produced its own vision testing charts, using the scheme of measurement originated by Hermann

Snellen, the Dutch ophthalmologist. The demonstration program in New York City furnished adequate proof that vision defects exist among the preschool age group in proportions about equal to those occurring among school children.

By the beginning of 1927, the Society's educational program for teaching the importance of vision testing for young children, as well as the technique of testing, was well under way. The present inquiry into current local practices and procedures in the matter of vision testing is, in a sense, an inventory to discover how well we have succeeded in what we started out to do. In this connection it is interesting to note that of the 1,237 organizations replying to this question on our schedule, 620, or 50.1 per cent, had seen a demonstration of the method of vision testing recommended by the National Society for the Prevention of Blindness. Out of the same total, 25 per cent state that the demonstration was a determining factor in the starting of their programs of vision testing for the young child and an additional five per cent were influenced indirectly either by the reading of our literature on the subject or the stimulation aroused in summer round-up campaigns of the National Congress of Parents and Teachers (which now includes visual acuity items on its medical examination form). Several others (amounting to four per cent) report that their techniques were improved after seeing such a demonstration.*

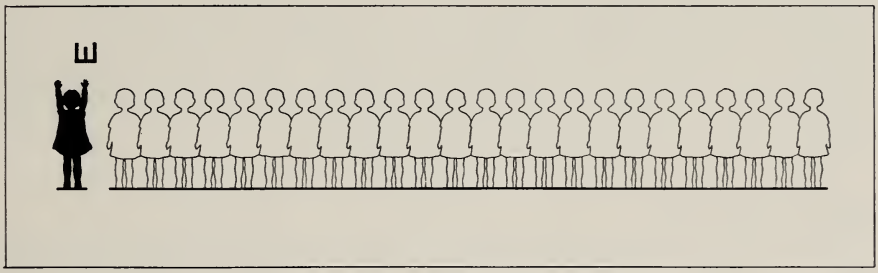
It is very interesting to note that almost 70 per cent of the organizations give as their reason for starting vision testing of young children a requirement or recommendation of their health or education authorities. This tendency is to be highly commended. However, we are inclined to doubt that the practice is as widespread as the figures would indicate. We are skeptical because, having found a tendency on the part of several organizations which are doing no testing whatever among preschool, kindergarten, or first-grade children, to reply to our question in this way, we feel that many may have had in mind vision testing in general and not

* It should be noted that demonstrations of the recommended method are now being given by several state organizations having prevention of blindness programs. According to files in this office the list includes: The Illinois Society for the Prevention of Blindness, the Maryland Society for the Prevention of Blindness, the Children's Fund of Michigan, the Missouri State Commission for the Blind, the New Jersey State Department of Public Instruction, the New York State Commission for the Blind, and the Pennsylvania State Council for the Blind.

just the testing of young children, as was specified in the question. Moreover, it seems logical to suppose that if work with the younger age groups were really required, a larger percentage of the children would be reached.

Of interest also is the proportion (7.9 per cent) of organizations reporting that they had been forced to start vision testing of the younger children on their own initiative because of the evidence that they saw of its need.

ONE OUT OF 25 Preschool Children Had a Vision Test in 1931



Type of Chart Used

It is perhaps not surprising that eye test charts using the letter "E" are the ones most commonly used for vision tests in the younger age groups. As mentioned above, this is the type of chart around which the vision testing method recommended by the National Society for the Prevention of Blindness is developed. The Society's symbol "E" chart has had an average sale of over 2,000 per year, which probably accounts for the fact that 66.1 per cent of the reporting organizations are using it. In addition, 26.9 per cent are using other "E" charts, 18.2 per cent are using charts containing pictures of objects, and 1.9 per cent are using a "broken circle" chart, either entirely or interchangeably with the Society's "E" chart. Comments on the comparative usefulness of the various types of charts were frequently expressed in the questionnaires.

A decided preference for the "E" chart seems to be general, although one organization feels that a satisfactory method has been

developed, using a broken circle chart. Another organization reports that very young children find the "E" chart harder to understand than a picture chart. One worker specifically mentions, what we have already noted in our office, that the accuracy of picture charts is questionable because of the variety of proportions in the pictures. Frequent mention is made of the fact that even children below par mentally can have vision tests with the "E" chart, because the four directions in which the "E" may point are more easily learned than the names of objects. In many places, also, the "E" chart is being used for all age groups to overcome the tendency of older children to memorize the sequence of the letters.

Specific mention is also made of the satisfaction felt by the workers in their ability to discover evidences of eye defects at an earlier age with the recommended method. The idea of making a game of the testing and having the children point with their hands or arms has apparently met with approval.

Lighting of Chart

One of the important features of the Society's method has been the stress laid upon having the test chart adequately lighted. We have strongly recommended the use of specially adapted artificial lighting for this purpose wherever available, since only by its use is it possible to assure, at all times and places, lighting which will be adequate, free from glare, and of equal intensity. It is somewhat of a disappointment, therefore, to find 67.4 per cent of the organizations reporting the use of daylight only, as against 14.8 per cent using artificial light, and 17.8 per cent using either daylight or artificial light.

Of course, we realize that for work in rural schools it is difficult to provide artificial light. Unfortunately, these schools are also likely to be the very ones in which it is impossible to arrange for good placement of the chart in adequate daylight. Even in city schools provided with electricity there seems to be a tendency to resort to artificial light only when daylight seems inadequate. It is well to remind those responsible for testing that, just as in any other test, it is important to have the conditions under which the test is done completely under control in order to be certain

that variations in visual acuity findings have a real significance. There is abundant evidence that school boards generally have not appreciated this need and so have been slow to provide suitable equipment for vision testing. Adequate equipment for vision testing would seem to be quite as important as scales for weighing, first aid kits, facilities for hand-washing, etc., all of which are now considered essentials in good health work.

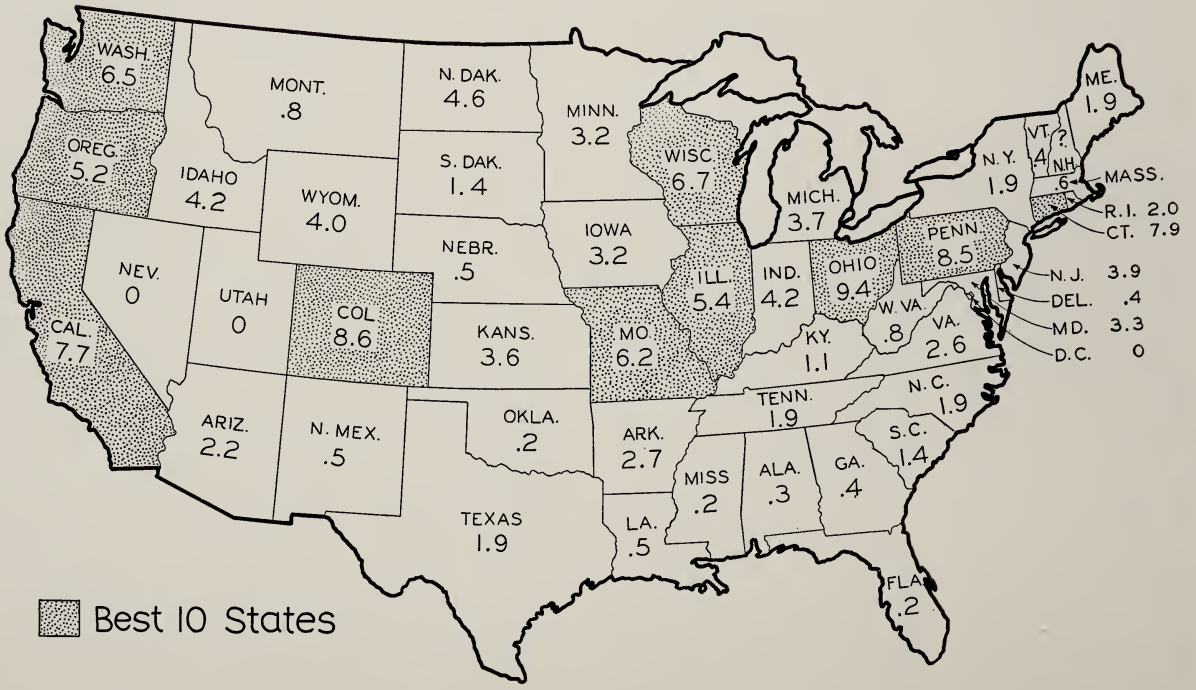
Responsibility for Vision Testing

It may be that the figures on the person doing the vision testing are biased in favor of the nurses because of the fact that our mailing list consisted chiefly of organizations using public health nurses, but we are inclined to believe that the relative proportions are typical of the distribution of this function among physicians, nurses, teachers, and others throughout the country. The data show that in 86.7 per cent of the organizations the nurse has either the full responsibility (59.8 per cent), or shares it with physicians (15.5 per cent), or with teachers (9 per cent) or with both (2.4 per cent). Physicians alone do the work in 8.4 per cent of the organizations, teachers alone in 4.2 per cent, while physicians and teachers work together in 0.5 per cent. Practically none (0.2 per cent) is done by volunteers.

About 12 per cent of the organizations reporting called upon us for further information and help in the solution of their local problems—a service which the National Society for the Prevention of Blindness is always glad to give. A number of these requests seem to suggest that a lack of confidence in their own work exists among persons doing the testing. It is evident, therefore, that more emphasis may well be placed upon the teaching of the techniques of vision testing so that public health nurses, teachers, and others may have an opportunity to acquire the necessary skill in testing as well as the assurance which comes with a knowledge of the how, why, and wherefore of the work they are undertaking.

It was particularly gratifying to us to find among the group of workers who had apparently not heard of the method of giving vision tests to children too young to know their letters a desire to learn more about it so that the children in their charge might be given the benefit of this preventive service.

Approximate Percentage of Preschool Children Given Vision Test in 1931



Comments and Suggestions

Comments were made by a little over 10 per cent of the organizations, nine per cent expressing satisfaction with the technique as recommended by the National Society for the Prevention of Blindness, or with some specific feature of it, while the remainder indicated some criticism. In many cases very definite reasons were given for the reactions mentioned. Some of the comments relating to the test charts and methods have already been given.

Perhaps the complaints most frequently voiced were that the tests are too time-consuming or that the results are not very accurate. In the words of one nurse, "It takes up too much time, and a busy nurse gets impatient." The crux of the situation seems to lie in the attitude of the person making the test. If the nurse is convinced of the value of the test, she will bring to the job her undivided attention and interest and will probably find, as many have reported, that "an unhurried and happy atmosphere is essential to a good job and that the results are well worth the time spent."

As to the accuracy of the results of the test, our own experience, which is reinforced by the reported testimony of many who commented on this point, has shown that the child's part in the test is well within the comprehension of small children and those of slow mentality.

Where the worker has reason to doubt the findings, it may be that the conditions of the test have not been controlled or that too much is expected of it. In the latter connection it is well to remember that the test is for visual acuity only. The findings will indicate how accurately a child can see, but neither the amount of latent eye defect which he may have, nor the discomfort involved in the effort to overcome this defect, are necessarily revealed *in the results of the test alone.* For this reason, it is felt that the reminder of a nurse in the state of Washington that "we stress the teacher's observation as to how the child uses his eyes" is most timely.

As has been stated before, only a complete examination by an eye physician will reveal the true condition, but, by a careful vision test and the observation of symptoms of eyestrain, public health nurses, teachers and other trained, non-medical workers can

screen out many children for eye examination who otherwise might go without this service.

Suggestions on various points in the technique or equipment are almost too numerous to be covered in an article of this length. However, we feel that the following are worth passing on:

Test cards may be cut up and one letter of each size mounted on a separate card that can be turned in any direction.

An "E" test card issued by one state gives instructions in testing on the back of the card.

For eye cover cards the use of attractive blotters, leaflets, etc., containing a health message which can be given to the children at the completion of the test serves as an incentive to co-operation.

A combination tongue depressor and eye cover which looks like a flat spoon may be used.

A strong flashlight, if properly held, may be used to illuminate the chart if no electric lights are available.

The cover card for exposing one letter at a time is less likely to soil the chart if one side is white.

Homemade chart holders adjustable to any child's height have been devised by various persons.

A child may be put at ease and much time saved for the tester if one or two other children are tested in the presence of the little one, especially if the others are older.

When new school buildings are planned a special room with proper lighting facilities should be provided for use in all physical examinations.

Conclusions

Reports received from organizations throughout the country indicate that there is a growing appreciation of the importance of giving attention to the eyes of young children. About one out of four counties in the United States has already started to meet the need for such service by incorporating into its health supervision program some vision testing of preschool and first-grade children. However, the need is by no means adequately met even in these counties. It is estimated that only four per cent of the preschool population of ages four and five years were reached during 1931.

The eye test chart and techniques developed by the National Society for the Prevention of Blindness for doing the testing have met with the approval of the medical profession and a large number of organizations which have tried them out, but there is evidence that the work could be made more satisfactory if each person charged with this important part of the health examination were given an opportunity to acquire the techniques and skills involved.

Satisfactory equipment for good work in vision testing is not generally available. In particular, provisions for lighting of the test charts are lacking. A satisfactory method of illuminating charts in rooms having no electric lights has yet to be evolved.

Whether the amount of vision testing of young children being done is affected by the fact that our check-up was made during depression times it is difficult to tell. It seems only reasonable to suppose that necessary economies in expenditures, personnel, and time, have delayed the expansion of this comparatively new program. However, the Society is glad to know that in spreading knowledge concerning this very essential part of a complete health examination, it has the enthusiastic support of many who have tried it. As one nurse put it, "Your eye test is the best I have seen. I am trying to get all nurses in the district to use it."

Editorial Note

The Society will continue the policy of supplying to communities, through official and voluntary organizations for health and education, the service of staff members to assist in teaching the technique of vision testing and in planning and setting up community programs of sight conservation.

A set of pamphlets* dealing with eye care of young children will be sent upon receipt of twenty-five cents to cover forwarding charges. The list includes:

49. Testing the Vision of Preschool Children
D.50. Vision Testing and Eye Inspection—An Essential Part of the Preschool Health Examination
76. The Eyes in Childhood

*The National Society for the Prevention of Blindness, Inc., 450 Seventh Avenue, New York, N. Y.

96. Eye Accidents in Child Play
98. Eye Injuries and Sympathetic Ophthalmia
100. Preventing Ophthalmia Neonatorum in Virginia—An Administrative Problem
101. Facts and Fallacies Concerning Squint (Cross-Eye)
103. Nutrition in Relation to the Eyes
D.33. Care of Child's Eyes in Case of Measles
D.65. Babies' Eyes in the Summer

The Eye Physician In Industry

J. Guy Jones, M.D.

THE industrial eye physician has a threefold responsibility—to the injured workman, to the employer and to the insurance company

THE principal demands made of an industrial worker in any trade are qualifications and the physical ability for sustained effort. We are here concerned only with the visual capacity of the individual as it affects his ability to carry on. By the "industrial worker" we mean any person or group of persons engaged in the pursuit of a useful or gainful occupation. "Oculist" is a term applied to a physician who, by special training and experience, has equipped himself intelligently to treat diseases and injuries of the eye. A better term would be "eye physician." More favorable results in the treatment of eye injuries are expected and demanded than formerly because of better understanding by the laity and increased knowledge among doctors.

Economics of Eye Injuries

In recent months not only the individual but the municipal, state, and national governments have had a vivid, tragic, and lasting experience of the expensive calamity of universal unemployment. When this occurs in a single family through the loss of the productive ability of the wage earner due to disease or injury of an eye, apparently only the immediate dependents are concerned.

Among the costs of eye injuries to labor are the limitation of employment, lessened ability to perform duties, and loss of time and earnings by the injured and other members of his family who must act as attendants. There is a waiting time, varying from three days to two weeks, in which the injured is furnished full

medical and surgical care, but for which no compensation is paid unless the disability lasts twenty-eight days or more—then the company "picks up" and pays for this time. The expense to industry includes the loss of the services of a skillful worker, temporarily at least, and the waste of time incidental to the accident in slowing down of production. Injuries require the shifting of employees, investigation of the accident, and attention to the injured. This necessitates the services of one or more fellow employees for a considerable time. In addition to this, there is a lowered morale among the workmen, with a decrease in efficiency and an increase in the insurance charges.

The insurance companies expect a certain number of injuries of each type and adjust their premiums in accordance. An excessive number of accidental or unjust claims is an unanticipated burden. In a recent article by the author* it was found that the average cost of investigating an accident case was $6.79, while the average medical expense, including hospital, X-ray, etc., was $21.88. In Texas, during 1931, there were 60,000 accidents, meaning that one person in 88.3 suffered an accident of some nature; approximately 10 per cent of these accidents, happening to one person in 795, were injuries to the eye requiring surgical attention. The great majority were due to a simple foreign body of the cornea requiring only first aid treatment and allowing the patient to return to work. To meet investigation costs and medical expenses, together with compensation, overhead, and dividends to stockholders, the insurance company receives from forty cents to $12 per $100 salary paid to insured employees, depending upon the risk incurred. Since this is paid by the employer, he must adjust his charges for the finished product, or reduce the expense of production, and labor is taxed accordingly.

Degrees of Visual Loss

Our definition of blindness is the inability to see light and objects with or without glasses. Patients are considered industrially blind before they reach this point. Industrial blindness varies with the character of the employment and its visual requirements, the most

* The Industrial Ophthalmological and Compensation Problem, J. Guy Jones, M.D., *Texas State Journal of Medicine*, **28**: 231–237 (July) 1932.

rigid being in the aviation, the railroad, and the army and navy signal services, where normal or better than normal visual acuity is required with a full visual field and no muscular defects. An applicant for these positions may be industrially blind with a vision of 20/40, while a worker in the oil fields, or a teamster, may have sufficient vision for all practical purposes when he has a 50 per cent loss. We ordinarily consider that a visual capacity of 20/40 is no handicap, and a vision of 20/200 as industrial blindness. However, many people with no better visual acuity are earning sufficient means to support themselves and their families, and other individuals are driving on our highways, under the safe guidance of the Almighty, with little better ability to see.

Injury to one eye affects the workman by restriction of his visual field; that is, the breadth of area which may be seen when the eyes are directed in one position. He loses the full effect of the third dimension, or stereoscopic vision. This may be tried by anyone if he will make a small dot with a pencil, then close one eye and attempt quickly to bring the pencil point back to the dot, or close one eye and try to thread a needle. This is no handicap to those who in early life have been deprived of the use of one eye, but the skilled mechanic requires months to adapt himself to changed conditions. The common expression, "the strength has gone into the good eye," is founded upon this fact.

It may be interesting to note that in the article referred to above, of the claimants examined for compensation, 28 per cent had a vision of 20/40, or better, in each eye; 42 per cent had no compensative injuries; and 44 per cent were industrially blind. Corneal opacities resulted in impairment of vision in 33 per cent of the cases; and 3.3 per cent had high refractive errors and one eye of little benefit from disuse, or the lack of development which we term amblyopia ex anopsia.

When there is loss of vision as a result of traumatic cataract, even though perfect sight is obtained in the eye with the addition of glasses, double vision and blurring usually result; when this is persistent, the eye is of little benefit. Considerable embarrassment may be avoided if this is explained to the patient before the operation. Recognizing this, some states consider the loss of the lens, or aphakia, equivalent to the loss of an eye. In others, and

medically, the vision is computed and compensation paid according to the best visual acuity obtainable with a glass of not over four diopters' difference between the two eyes.

What Is Adequate Compensation?

Practically all of our states, Canada, and a large percentage of the foreign governments have enacted some form of workmen's compensation law. There is a fair uniformity in the implications and benefits to be derived. In countries with a lower type of living and family demands, as compared with ours, the payments seem meager. Among the states of the Union, there is a wide margin of difference in the benefits. In the majority of states, for the loss of one eye a certain percentage of the average earning power is paid for one hundred weeks, in some as low as fifty weeks, while blindness in both eyes is considered total permanent disability and the payment varies from $1,000 to $15,000, or for about 401 weeks. This wide discrepancy is probably due to legislative influence by outside interests. It seems inconsistent for the legal profession to criticize doctors for differences in findings and opinions when they, as interpreters of legislative rulings, accept laws of such variance.

Common Types of Eye Injury

In considering the causes of visual loss, corneal opacities, resulting from chemical, mechanical, or ulcerative changes, are by far the most frequent during that part of life of the greatest activity, and in the aged are probably responsible for about eight per cent of the blindness. Corneal opacities interfere with vision by diffusion of light, actual obstruction of the rays, or a severe irregular astigmatism. The size and position of the opacity determine the loss, while the depth of the scar and age of the patient will determine its permanency. The opacity may be slightly influenced by treatment, and in the course of time one is surprised at the rate and extent that clearing has occurred.

Corneal opacities are, to a great extent, preventable, in that they are usually a result of delayed or improper removal and after-treatment of the simple foreign body in the cornea. This delay may be no fault of the patient; the foreign bodies are often received

and no significance attached to the discomfort until several hours later, when the corneal irritation, or beginning ulceration, forces him to seek advice. Too often, however, clumsy attempts at removal by fellow workmen, or unskillful treatment by physicians without proper facilities, produces large abrasions of the cornea; and the failure to apply proper after-treatment results in ulcerations with subsequent scar formation.

Direct blows from blunt objects with even light or moderate force often result in severe destructive changes to the eye. The globe is filled with fluid and semi-fluid content, and, being incompressible, there is a sudden increase in force, which is transmitted to the other tissues of the eye, resulting in tears or ruptures of one or more of its inner coats and, if severe enough, of the sclera itself. There may be dislocation of the lens and other lacerations of the vital structures. In each case a large amount of blood escapes into the eye, leaving residual changes which markedly affect the usefulness of the eye. After these injuries the vision may be suddenly lost, and, if the trouble is due only to extravasated blood or swelling, the eye may recover its usefulness; on the other hand, minute tears or hemorrhages may escape notice until weeks or months after the injury. With destruction of the retinal elements sight fails.

Perforating wounds are usually due, in the bottling and engineering industries, to flying glass and broken water gauges, and have become quite common among truck drivers. This type of injury should become less frequent with the introduction of shatter-proof glass. When these wounds involve the cornea only much may often be done with skillful surgery. All injuries involving the lids and eyeball should be treated only by an eye surgeon. I have under treatment at present a young man who, while driving a truck in west Texas, suffered a serious accident in which the upper lid was cut from the brow to the margin. The wound was sutured entirely without either patient or physician knowing that the eyeball had been incised over the entire cornea and part of the sclera. This condition was not recognized until one week later when he came into our office for removal of the stitches in his upper lid.

Due to rigid inspection of workmen's tools, introduction of

more labor-saving methods in manufacturing, and the wearing of goggles by the workmen, together with other protective devices, intraocular foreign bodies have become less frequent. They are still too common, however, and it is seldom that an eye regains useful vision after such an injury. Many cases are reported as recovering normal vision after successful magnet extraction of the object, but in after years most of these eyes suffer other changes,

Courtesy of The Pullman Company

The flying splinter cracked but did not penetrate the protecting goggles.

either as a result of entrance or exit of the foreign body, or, as is possible in all eye injuries, because of infection and sequelae.

In all severe head injuries with the possibility of fracture, the attending physician is derelict in his duty if he fails to obtain the services of an eye physician as soon as circumstances will permit. The oculist may be of some assistance in the management of the case by his familiarity with the eye findings. Also by early examination he may prevent unjust claims for injuries and loss of vision from unrelated causes.

The introduction of calcium products into the eye, most commonly lime or carbide, results in opaque deposits, which are extremely difficult to remove and have serious results. Caustic alkalies are most destructive, and acid burns from battery explosions are frequent. Workers often suffer from the effects of exposure to light and heat, and they accuse smoke, chemical fumes, and petroleum gases of causing various ocular conditions. We have seen patients blind, they claim, because they got salt and flour into the eye, and some war veterans still complain of the effects of gas upon the eyes when they attempt to work.

The Oculist in Industrial Ophthalmology

The oculist's services are manifold. In industrial surgery he must be more than doctor. His first duty is that of eye physician, rendering prompt, skillful, and attentive treatment so that the injured may return to work as early as possible, with the eye as nearly normal as possible. He is also agent for the employer or insurance company and should guard against unjust and excessive claims. His services extend beyond the treatment of the actual injury, as there is a mental and emotional side which must be taken into consideration. Failure of the physician to secure confidence and co-operation through lack of tact or discretion results in a suspicion that the insurance company is penurious and negligent in the settlement of claims. Some doctors expect and render excessive charges for their services when the insurance company is paymaster; and when they enter court to testify under oath they produce carelessly and poorly compiled notes that are of little benefit either to patient or to defendant. Statements and prognoses to both parties should be guarded, definite, and accurate, so that they may be defended on cross-examination.

Save Your Eyes

Professor F. de Lapersonne

The American National Society for the Prevention of Blindness is proud to have played an important part in the establishment, three years ago, of the International Association for Prevention of Blindness, which maintains its secretariat in Paris, France. Despite the difficulties experienced during this period of world-wide economic depression, the International Association has gone forward with its program of stimulating the organization of national committees for the prevention of blindness.

The third annual meeting of the Association, held in Paris on November 19, was devoted to a discussion of sight-saving classes; one of the principal speakers was Mrs. Winifred Hathaway, associate director of the American National Society. In connection with the meeting, the International Association co-operated with the French Committee for the Prevention of Blindness in an intensive public education campaign which included a series of six radio talks on the care of the eyes. We are pleased to publish here an English translation of one of these talks—that of Prof. F. de Lapersonne, noted ophthalmologist of the University of Paris, who is president of the International Association.

IN terms of human understanding, the word *blind* is a most powerful word. To the mind of man, there are few greater misfortunes than the loss of sight.

It is estimated that there are at least two and a half million blind persons in the world, if one accepts the figures of official censuses; but we know that wherever detailed studies have been made the official figures are shown to be only half of the actual number. And for every blind person, how many are there whose vision is so low that they are seriously handicapped in the effort

to earn a living? It is difficult to estimate the unhappiness and distress represented by these facts.

In our western world, there are many and powerful organizations that make it their business to help the blind. In the Orient, unfortunately, these efforts would seem microscopic. The immensity of the problem there exceeds the possibilities of human endeavor. What is possible—what is necessary and urgent—is to dry up the source of future blindness.

Taken in the beginning, most of the diseases which threaten the loss of eyesight are curable. The majority of those who are blind need never have been so. It cannot be said forcefully enough that, at the present moment, there is no scourge against which we are better equipped to battle. Simple, everyday measures of hygiene, within the reach of everyone, are enough. A few drops of silver nitrate, instilled at the proper time, prevent ophthalmia neonatorum, or "babies' sore eyes." Smallpox, a frequent cause of blindness in our colonies, disappears with vaccination. Protective goggles, worn at work, reduce the rate of eye accidents from five to one. It is simply a matter of hygiene, a matter of elementary precautions. Why, then, is it that in spite of this there are so many blind, so many whose sight is endangered?

In France, alone, the situation is very serious: in the entire country there are 30,000 blind persons; in Paris, 40 per cent of compensation for permanent incapacity is due to the results of accidents to the eye. In the colonies, about 50 per cent of the native population have lost sight or are threatened with blindness. In Tunis, 90 per cent of the school children are victims of trachoma. Consider the loss which these facts demonstrate: at home, in the barracks, in the workshops. If blindness is preventable, if measures which can prevent it are simple and within the reach of all, what do these statistics say to us? Unhappily, there is only one possible explanation: ignorance.

The goal of the French Committee for the Prevention of Blindness is, above all, education in sight conservation: to open the eyes, the minds and the hearts of the people to the extent of the damage and to the necessity for bringing forth the means of remedying it. Its work has international responsibilities, since France has been chosen as the seat of the International Association for Prevention

of Blindness, whose secretariat is in Paris. Where would one find a better basis for the co-operation between peoples of different nationalities than in the alleviation of human suffering?

The work of the national committee comprises the many and varied tasks which are implied in a program for the conservation of sight: the battle against trachoma in the colonies; the campaign against venereal diseases; the institution of prenatal care for expectant mothers; the protection against eye accidents in industry; educational projects, such as the creation of special classes for children with seriously defective vision, and, above all, the education of people in the conservation of sight.

With the conviction that such a program can leave no one indifferent, that public opinion will respond warmly to its appeal, the French Committee for the Prevention of Blindness looks directly to all those in authority and to all those with good will for their co-operation in the task which it has undertaken. The national committee is poor. In one way, this is a spur to constant endeavor. Great effort will be necessary to make it known and substantial results will need to be achieved to make it appreciated. Give the committee the opportunity to do both. Do not leave it unarmed and impotent before the task which awaits it.

Light for Vision Testing

Mary E. Stebbins

HERE is a description of a portable, lighted case which is being used successfully for routine vision testing with the Snellen chart

CORRECT light, properly placed, constitutes one of the most important details of vision testing, which is of little avail unless accurately done. There should be sufficient, evenly distributed light; the Snellen chart should be free from shadows and glare; the person whose vision is being tested should face a dark or neutral background and have no light on or in his eyes.

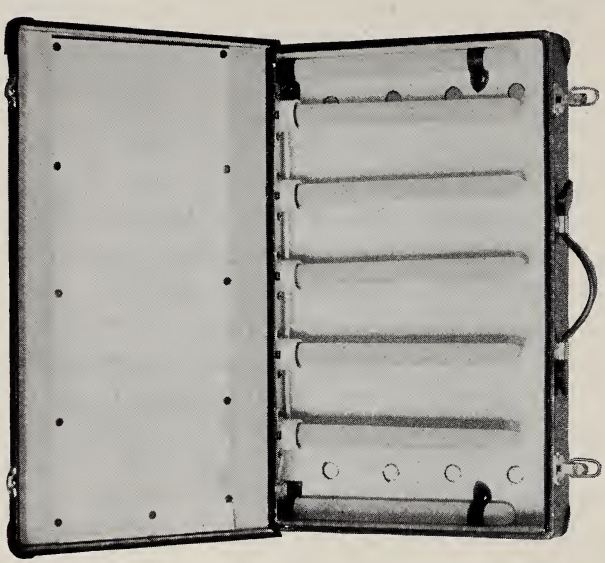
A cabinet or case containing electric lamps behind the chart seemed to be most desirable; one that could be easily carried about by hand and readily and quickly set up for use would greatly facilitate routine vision testing for those who are frequently so engaged, and in various places, such as teachers, public health nurses, and doctors doing school testing and similar work.

Keeping those points in mind the Department for the Prevention of Blindness of the Missouri Commission for the Blind, with the assistance of Mr. Phil V. Brown, an illuminating engineer, and Mr. Clarence W. Bahn, experimented for more than a year in an effort to develop such a portable lighted case, with the result that one has been evolved which is being found satisfactory.

The case, which is light in weight and shaped like a suit case, is of black, imitation leather; it has a handle on one side so that when being carried the lamps are upright in their sockets; contains five lamps and is wired for electric current. Provision is made inside the case for carrying two extra lamps for immediate replacement in case one burns out during use. A removable cover protects the Snellen chart and lamps when the case is not in use. The

special, long lamps are very carefully spaced to eliminate shadows, to give the desired even distribution of light, and are frosted to eliminate glare.

The Snellen chart is thumb-tacked inside an opening in the front of the case (in front of the lamps) to keep it free from vibration. It is placed as nearly as possible flush with the edge of the case to avoid any unnecessary space between the cover card and the symbol being shown.



Case open—shows arrangement of lamps and Snellen chart.

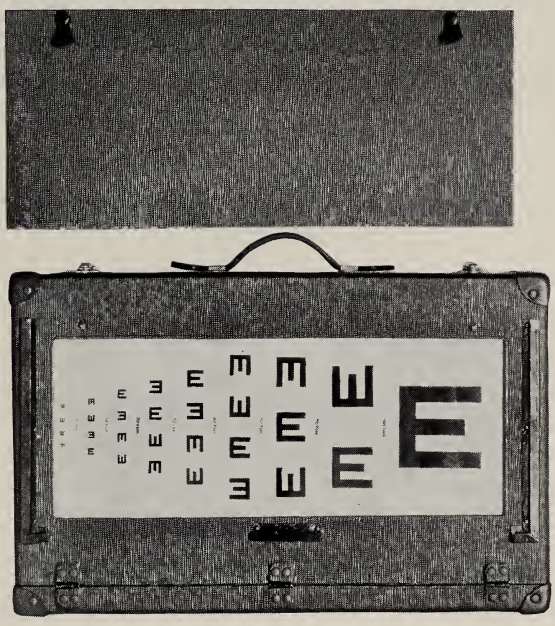
The case is asbestos-lined to protect against fire from the heat generated by several lamps in the limited, confined space. Two rows of openings, one at the top and one at the bottom of the back of the case, permit ventilation and the escape of much of the heat.

Protection to the case and a convenient place for carrying connecting cord, twin socket, cover cards, etc., are furnished by a simple, khaki-colored, cotton slip cover, on the front of which is a large patch pocket with envelope cover which closes with snaps.

During vision testing, all parts of the chart except the symbol being shown are concealed behind a black cover card. This

protects the eyes being tested from the light which would otherwise shine through the chart, refuting its own end.

In working out the details of the case it seemed necessary to keep it as simple, as compatible with efficiency, and as light in weight as possible, and to keep the purchase price down to the lowest limit if the case was to be available for general use by individuals or organizations in any number. Certain refinements would be possible and desirable but all add to cost.



Case—slide removed to expose Snellen chart.

Some difficulty was experienced in finding a manufacturing concern willing to take over the making of the case for present and future orders and willing both to make the case and to install the necessary sockets, wiring, etc. A trunk manufacturing concern* finally consented, and is now making the case complete with all electric fixtures and ten feet of connecting cord. The Snellen chart and the cloth cover are not included with the case as delivered by them.

*Herkert and Meisel Trunk Co., 910 Washington Avenue, St. Louis, Mo. Price, $12.50.

Late in August the first finished case was delivered to the Department which developed it; less than a month later two school boards and one eye conservation organization, other than the one by which the case was developed, had supplied themselves with such cases. Requests for information about the cabinet have since been received from Illinois, Massachusetts, and West Virginia. The Missouri Commission for the Blind, therefore, feels justified in believing that it does fill a need and will prove a serviceable and satisfactory adjunct to sight conservation programs.

Cataract—Its Relation to Medical Social Work*

John M. Wheeler, M.D.

THE medical social worker is of especially valuable assistance to the ophthalmologist in cataract cases because she can obtain important information which otherwise might not be secured during the patient's brief visits to the eye clinic

A FEW centuries before Christ, Aristotle and his friends traveled about and were especially interested in coining words—they were very good at it. They noticed in the eyes of certain blind people a green reflex, so that they imagined something green was growing in the eye. Thus they coined the word "glaucoma," meaning green growth. In certain other people who were blind, they noticed a white pupil. They knew nothing about the anatomy of the eye. Something in the pupil appeared grey or white—knowing a water-like fluid circulated in the eye, they obtained the impression that, as it got to the upper part of the eye, it fell down so that foam was formed. They thought the water-like fluid falling into the lower part of the eye resembled a waterfall, hence they named it "cataract." Some of these names have stuck and are much more interesting than many of our modern scientific terms.

Physiology of Cataract

Cataract is an opacity of the crystalline lens of the eye. The lens is formed early in embryonic life from an infolding of the superficial skin. A pocket is formed as the process goes on and grows deeper and deeper, until finally it closes over entirely. Later the

* Presented during the series of study meetings on Medical Social Service in Eye Clinics arranged by the Committee on Development of Social Service in Eye Clinics of the Medical Social Service Section of the Welfare Council of New York City.

lens becomes entirely detached; it remains clear and never has blood vessels. It is so clear that rays of light go through almost without interference. These embryonic cells, then, which were on the surface, become folded in so that we have a lens body which is almost round, and the cells of which are arranged in layers like an onion. The lens cells continue to multiply and instead of being cast off, as they are from the skin, they accumulate. Normal lens cells are clear and remain clear. If at any period in the growth of the lens these new cells are not properly nourished, the particular layer of cells undergoing formation becomes opaque. Opaque lens cells go under the name of cataract. If in the process of the development of an infant nourishment of the lens cells becomes deficient, we may have an opaque layer of lens cells, or what is known as congenital cataract. We may have the opaque process completely involving the lens, and have a complete cataract. So that, either in the early formation of the lens, or late in life, we may have development of cataract.

Different Types of Cataract

Among the many types of cataract are the juvenile and senile cataracts and cataract that develops in diabetes. In diabetes, there is a toxic process which interferes with the nutrition of the lens and it becomes cataractous. There is, in addition, the cataract which results from an injury, which is called traumatic cataract. Senile cataract comes on late in life; cataract from disease may develop at any time.

It is well to bear in mind two main classifications: one, the non-progressive cataract, and the other, the progressive cataract. Non-progressive cataract is one which forms early and may remain throughout life, although it may not seriously interfere with transmission of light through the lens. Congenital cataract has not much tendency to increase. We can speak of cataracts which tend to remain the same through life, and those which progress through the years.

Diagnosis and Prognosis

Probably one of the most frequent mistakes is that of diagnosing all sorts of things as cataract. A common lay mistake in diagnosis

is to call a scar of the cornea a cataract. A large corneal scar is very easily seen and is very commonly called cataract. A cataract concerns the lens only. Social workers should be able to give patients an idea of what cataract is. They should be able to get the idea over to them that cataract is not a film drawn over the eye, but is something within the eye. In order to get rid of cataract the lens which is cataractous must be removed.

Congenital Cataract.—There is no medicinal treatment that is available for the congenital cataract. If the cataract considerably more than fills the pupil and is dense, an operation is required. If the cataract is smaller than the pupil, it may be possible for the patient to see around it and to have good sight.

There are two ways of operating for congenital cataract. One way is to remove part of the iris. If a portion of the lens is opaque, it may be possible to improve vision by making an opening in the iris in front of a relatively clear part of the cataractous lens, permitting light to pass by the cloudy area of the lens. In other cases an incision in the lens capsule must be made, so that the aqueous fluid may mingle with the lens cells and favor their absorption.

Social workers, if they understand the physiology of congenital cataract, will be able to explain to the satisfaction of parents that a single opening in the capsule may not be enough. It may be necessary for the surgeon to make more than one incision in the capsule of the lens, as all cells may not be absorbed as a result of the first operation.

Senile Cataract.—Cataract that comes on in later life is best known as senile cataract. It goes through certain steps of progression. If a cataract forms, the lens swells so that as the lens fibers are dying and become liquefied, the lens changes shape. After the swelling develops, the lens becomes more powerful, and it may bring rays of light to a focus in front of the retina. This means that the patient becomes somewhat nearsighted. This condition is known as "second sight." Old people become very much like children. The development of cataract is a manifestation of senility. The patient with early cataract brags about reading without glasses, but never about not seeing well at a distance. It would be foolish to tell all people who have "second sight" that they are developing cataracts. They may die before cataract

develops to serious proportions, so we do not tell them. They may develop other manifestations that will make it necessary for them to know. The patient may develop glaucoma, or other conditions may develop which may interfere with sight, or the lens center may become opaque, so that the patient must be told. It is frequently useless for people to know they have cataract if the sight is not badly impaired. When we must explain to a person that he has cataract, let us do it as tactfully as possible. Let him know that there is really nothing to be alarmed about. If it should become necessary for the cataract to be removed, the chances are that he will have good sight again.

The Outlook for Useful Vision

In congenital cataract, if we take out the lens by the needling operation, we are robbing the patient for life of his ability to focus. With a child, the surgeon is robbing him of something very valuable if he destroys his ability to focus by removal of his lens. This must be taken into consideration when an operation is advised. In the old person, the power of accommodation has gradually been lost. It has disappeared over a period of ten, twenty, or forty years, and he does not feel much worse. Take out the cataract and, as he has not lost very much accommodation, he does not feel the change as a younger person would.

When Shall We Operate?

The proper time for an operation for cataract, in my opinion, is when the patient is functionally so seriously impaired as to vision that he is unable to continue his work or to get on with the use of his eyes. Some will not agree with me about that, preferring to wait until the cataract is entirely ripe before operating.

There is a question of whether cataract should be removed when developed in one eye, if the vision is good in the other, and there is a difference of opinion about that. In a young person, cataract might cause a real deformity. The disadvantage is that there is a grey pupil instead of a black one. It is usually for the sake of appearance that the cataract is removed when it exists only in one eye. In an older person, I should never remove it where one eye alone is involved.

If a cataract is removed from one eye in an old person, the images in the retinas do not fuse properly. The patient is confused by two images, and if he tries to fuse them he is very miserable. It is not feasible to prescribe a lens which will enable both eyes to focus together. The condition must be explained by the social worker, who should get her patient to understand this fusion difficulty.

Summary of Discussion

At the time of patient's first visit to clinic, when a diagnosis of cataract is made or treatment to prevent the development of cataract is instituted, the social worker makes her first contact with the patient. So that there may be no misunderstanding or loss of time, she interprets the diagnosis to the patient, seeks his co-operation, and endeavors to remove any obstacle which may block the effectiveness of the prescribed treatment.

As many cataracts are complicated by inflammatory diseases, the removal of the foci of infection and the improvement of the hygienic surroundings is most essential. The social worker may be the factor in making this possible. With the knowledge that individuals exposed to excessive glare and heat while working are prone to cataracts, it is important that working conditions be controlled.

Because conditions that interfere with the nutrition of the mother may result in development of cataract in the newborn child, prenatal care should include proper nourishment of the mother.

By bringing the evidence of these social factors to the doctor and to others concerned, the social worker may contribute to the successful treatment of cataract.

Editorials

Future of the Sight-Saving Review

AS THE SIGHT-SAVING REVIEW approaches its second birthday, it would seem an appropriate time to evaluate the progress which has been made and, on this basis, to formulate plans for the future.

Although the REVIEW was undertaken in the midst of a great economic depression, during a period that has seen a downward trend in the affairs of individuals and organizations, its first appearance met with a hearty welcome; and its slowly but steadily growing subscription list has been testimony to its value. Comment in scientific, educational and health journals, as well as in the daily press, has not only been favorable but has also indicated the need for such a journal.

The SIGHT-SAVING REVIEW gratefully acknowledges its indebtedness to the contributors whose co-operation has done so much to give the magazine its ranking in the health field, and looks forward to continuing to offer authoritative articles and reviews in the field of sight conservation.

In the two-years' existence of the SIGHT-SAVING REVIEW valuable criticisms and recommendations have been received. Since the success of any journal depends largely upon the interest and the response it evokes, the editors present three suggestions which have been received.

Reduction in Price.—In view of the financial stringency which has been imposed upon many individuals and organizations, it has been decided to reduce the subscription cost of the REVIEW from $3 to $2 per year. This substantial reduction, it is hoped, will enable a considerable number who have expressed interest in the magazine to become subscribers. The change goes into effect with the March, 1933, issue. Those who subscribed at a date later than March, 1932, will have the benefit of the reduced rate through an extension of their subscriptions.

Glossary.—Although the articles and other material presented in the REVIEW are always prepared for a lay reading public, it is almost inevitable that specialized terms should occasionally be used. It has been suggested that a brief glossary would clarify, for those of us outside of special fields, words of uncommon usage.

Readers' Forum.—While the editors seek to present the numerous points of view in conservation of vision, particular problems —medical, educational, or social—frequently arise on which readers may differ from the authors or which they may feel need amplification. A forum section for the use of readers would offer an opportunity for discussion and exchange of opinion on various aspects of sight conservation. Individual questions would be turned over to consultants in the particular field. This department, obviously, would require the full co-operation of readers.

These two latter projects, which it is hoped will increase the service of the SIGHT-SAVING REVIEW to its readers, will be incorporated tentatively in forthcoming issues. The editors solicit most earnestly from the readers of the REVIEW other ideas and recommendations.

The National Society—A Democracy*

The National Society for the Prevention of Blindness represents the will of some twenty thousand people to conserve eyesight. It would seem appropriate at this time of annual meeting and the approaching close of the year to review briefly the way in which the wishes of the supporters of the Society are carried out.

The constituency of the organization is represented by a Board of Directors, thirty in number, who are actively interested from social, humanitarian and medical angles in the prevention of blindness and the conservation of vision. These directors are elected in groups of ten, for three-year periods, by the members of the Society, at the Annual Meeting. The Board meets at least twice a year to review the work in progress and to suggest and pass upon future activities. In the intervals between meetings, it delegates active power for the general business and management

*Abstract of a statement made by the managing director at the Annual Meeting of the National Society for the Prevention of Blindness, held in New York City, December 1, 1932.

of the work of the Society to an Executive Committee. This Committee, consisting of nine members of the Board, holds at least five meetings a year and as many more as may be necessary. Reports of its meetings and actions are made to the Board for formal approval or disapproval.

The program of the National Society is carried out by a professional staff appointed by the Board, with the assistance of a clerical staff. The activities of the staff are recorded and reported to the Board of Directors, and incorporated in the annual report to members. Financial accounts are audited twice a year by a certified public accountant.

Over the period of seventeen years of national corporate life of the Society, much progress has been made in the prevention of blindness; however, we cannot rest at this point. The current need for economy has prevented the undertaking of many projects which might further help to solve the vast problem of preventable blindness and impaired vision. The present economic stress, with its resulting malnutrition, may be reflected in the eyes of the growing generation. This constitutes an additional challenge for vigilance on the part of those who have a responsibility for the conservation of vision.

Jessie Ross Royer

It is with sorrow that we write of the recent death of Mrs. Jessie Ross Royer, staff associate of the National Society for the Prevention of Blindness from November, 1926, to October, 1928. During her period of service with the Society, Mrs. Royer initiated a technique of testing the vision of preschool children which has made possible a more general detection of eye difficulties at an early age; by her wise, forceful and diplomatic approach to professional and lay groups she built the foundation for an eye health program that is of ever increasing significance.

The National Society recognizes with appreciation Mrs. Royer's contribution to the prevention of blindness and feels a deep sense of loss in the passing of a valued associate.

Note and Comment

Proper Lighting Pays.—That efficient lighting has a concrete dollars-and-cents value was the discovery of one manufacturer employing a thousand men and women. In an effort to reduce his accident compensation bill, he modernized the plant lighting; his compensation bill fell from $15,000 to $6,000. After deducting the extra lighting costs involved in improved lighting, he found that he had made a net saving of $1,700. The advantage to his employees in saving of pain and inconvenience is a matter which cannot be calculated.

Direct Observation in Measuring Eye Movements.—Are direct observations on eye movements sufficiently accurate to obtain an actual picture of the eye in reading? Francis P. Robinson and Paul G. Murphy of the State University of Iowa made an experiment, in which they photographed and observed directly the eye movements of a group of readers, and found, according to their report in the August 19 issue of *Science*, that direct observation gives a prediction of eye movements at best only 64 per cent better than chance. For preliminary diagnosis, direct observation may suffice; for accurate study of eye movements in reading, photography must be used.

War Against Ophthalmia Neonatorum in New York State.—In a determined effort to eliminate ophthalmia neonatorum as a cause of infant blindness, the New York State Commission for the Blind and the New York State Department of Health, through its Division of Maternity, Infancy and Child Hygiene, are coordinating their efforts to prevent and cure this devastating disease and cause of lifelong visual handicap. During the year 1931–1932, 79 cases came to the attention of the Department of Health and were investigated by the Commission's Prevention of Blindness Department. In 20 cases, the infection developed before the third day of life and occurred, presumably, at birth; the remainder developed later and apparently were caused by contact with a diseased person. About 50 per cent of the cases were due

to the gonococcus germ. Because of the immediate and thorough care outlined by the sanitary code and executed under the direction of the Prevention of Blindness Department, only two of the 79 infants lost complete sight, and 52 recovered full, unaffected vision. Prenatal care, and precautions at birth and after, would have saved two children's sight, as well as the cost of the elaborate medical and nursing care given to these needlessly infected babies.

As an added precaution in the prevention of blindness from ophthalmia neonatorum, the Westchester County (N. Y.) Department of Health issues the warning that although the sanitary code of New York stipulates the use of either silver nitrate or an equally effective substance to be used as the compulsory prophylactic in the eyes of newborn babies, experience has shown that there is as yet no substitute for the effective action of silver nitrate. Of the eight cases of ophthalmia neonatorum which have developed in the county within the past few months, all occurred when a substitute prophylactic had been used at birth.

New Eye Clinic in Michigan.—The Children's Fund of Michigan will soon establish a new eye clinic in Iron County for the eye examination of all school children and for the provision of glasses and treatment for those who cannot afford to pay.

Prevention of Blindness Popularized Abroad.—"Save Your Eyes" was the message of a recent issue of *L'Animateur des Temps Nouveaux* which devoted a special issue to make known, in popular language, the endeavors of the International Association for Prevention of Blindness. Outlining tersely and graphically the structure of the eye, the primary causes of blindness, the hygiene of the eye and points in prevention of eye accidents, this popularized pamphlet has met with a most hearty reception, according to the August 12 issue of *L'Animateur*. Circularized officially throughout French Africa, it inspired a broadside for elementary school children; authorities in India, interested in the problem of prevention of blindness, have sought to have it translated into English and the Hindu dialects; Mr. Bishop Harman judged the pamphlet to be one of the best of its type that has yet been presented.

County School Ophthalmic Service.—The primary objects of a school ophthalmic service are preservation of sight and correction of visual defects. In describing the eye work done by the Derbyshire County Health Department in England, in the August 6 issue of the *Medical Officer*, Dr. T. E. A. Carr emphasizes the importance of the establishment of refraction centers and the need for co-operation with local hospitals for eye treatments and operations. He mentions in particular the difficulty of adequately treating squint under a school eye service, since the important step of fusion training is almost impossible to carry out over a wide territory. This paper again demonstrates the serious efforts being made by local health authorities in England to prevent blindness and conserve sight.

Ophthalmological Society in China.—Twenty ophthalmologists met recently at the Peiping Union Medical College to organize a Chinese ophthalmological society. From the richness of ophthalmological history in China and the full field for ophthalmological aid, interesting reports may be expected from this group.

Systematic Attack on Trachoma in Rural Turkey.—A thorough and intensive attack on trachoma is being made in rural sections of Turkey. In a traveling unit, a physician, who is a trachoma specialist, and two sanitary inspectors and dispensing physicians give rural villages semi-yearly inspections and establish treatment centers; stringent laws bar the persons suffering from trachoma from contact with well persons, particularly in schools, offices and institutions. Combined with the practical work of finding and curing the cases of trachoma, an intensive campaign for the hygienic education of these people is being carried on.

Canada Finds Industrial Eye Accidents Most Prevalent.—Of the 824 cases of blindness due to accident, registered with the Canadian National Institute for the Blind, 252 were due to accidents met in industrial occupations, and 149 to accidents which occurred in play. Scissors and knives, shotguns and balls were the seemingly harmless agents in producing blindness in this group; in industrial occupations, explosions accounted for half of the eye casualties,

and entry of foreign matter into the eye accounted for a quarter. From a study of Canadian press clippings during the spring and summer months, it was found that the most frequent agents of eye accidents, apart from industrial causes, were guns, dynamite, catapults, arrows, fireworks, pucks, etc.

Sight Without Vision Center.—In spite of the common idea that without the vision center of the brain total blindness necessarily follows, Dr. Donald G. Marquis demonstrated before the American Psychological Association meeting at Ithaca, New York, that dogs whose vision centers were removed are able, after re-education, to distinguish between different shades and intensities of light. After the loss of the visual cortex the habit was impaired, but was relearned in about the same time as that required originally.

Miners' Nystagmus and Mine Lighting.—When 27 men in a coal mine in England were equipped with high candle power electric lamps, for a six-months' period, no signs of nystagmus developed among the 22 who started out with normal vision; and among the five who, at the beginning of the experiment, were suffering from nystagmus, two were cured and one considerably improved. At the end of two years, all the nystagmus cases were without symptoms or characteristic reflexes, and none of the others had developed the disease. In the control group, equipped with ordinary miners' lamps, one new case of nystagmus developed.

Help for the Disabled.—Current information indicates that fully seven million people are handicapped in earning their living, by accident or disease which prevents them from engaging in any occupation, or which makes a change of occupation imperative. In this group are included crippled children, injured workmen, the blind and deaf, the victims of tuberculosis and heart disease. The National Rehabilitation Association aims to secure for such persons special training for work that they can do, and special help to obtain employment, through general public education of the needs of the handicapped and through co-operation with social agencies in the field.

Warning Against Gonorrheal Ophthalmia.—The complications of gonorrhea are often most severe, but none can be so drastic as

the loss of sight through the infected person's carelessly rubbing his eyes and carrying to them this dreaded infection. Ophthalmologists who have seen cases of gonorrheal ophthalmia in adults should warn their fellow physicians, who, in turn, should warn their infected patients, of the quick and dangerous spread of the gonococci to the delicate tissues of the eyes. Two recent cases of eye infection caused this warning to be made editorially in the Wyoming section of *Colorado Medicine* for October.

Why Black Type?—Although it has been accepted that black type on white paper is more legible than white on black, very little research has been made to prove this. In their "Studies of Typographical Factors Influencing Speed of Reading," the sixth of which appears in the June, 1931, issue of the *Journal of Applied Psychology*, Donald G. Paterson and Miles A. Tinker report finding, through experiment, that the legibility of white type on black stock is slightly less than the inverse, and more usual, arrangement; they recommend that when the white type is used on black background to attract attention, the amount of reading matter be nominal so that the question of reading speed is unimportant.

In a further experiment reported in the same *Journal*, Grace Holmes finds that black type on white background is 14.7 per cent more legible than white on black. These experiments bring out the basis for the assumption that black type on white background is the most logical combination for ordinary reading.

Sight-Saving Classes in Massachusetts.—There are now 36 sight-saving classes in the state of Massachusetts, according to the latest report of the Department of Education, division of the blind. Experience has taught that the facilities of these classes for the conservation of vision of children with serious visual handicaps need to be made available to one child out of every 700 of the school population. Not only is the child with low vision assisted in reaching the academic levels of his normally seeing companions, but he learns without the psychological handicaps which he would encounter in the usual class; vocational preparation is stressed in these classes in order that such children may enter a profession or business where sight is not subjected to strain.

Traveling Health in Pennsylvania.—Pennsylvania is making a special effort to conserve the health of her rural preschool citizens through use of the mobile health unit, or caravan clinic. While no corrections are made by this traveling health center, of which there are two, the aim is to discover where medical treatment is needed and to stimulate the local committee to co-operate with the public health nurse in getting defects corrected before the school doors open. Part of the procedure in checking up the physical health of these children lies in the application of preschool vision testing, which, taught by the Sight Conservation Service of the Council for the Blind, follows the most accepted method of testing for young children. Of 9,000 children tested this summer, 500 were found to be shortsighted, and 10 blind eyes were discovered. Not only does the check-up obtain for the children about 50 per cent correction, but, in talking with the mothers during the examinations of the children, the principles of child health are constructively taught.

The Maddox Cheiroscope for Correction of Squint.—The principle of pressing the hand into service for the eye is the basic idea of the Maddox Cheiroscope; vision is divided with an angled mirror septum so that the eyes function separately. The message is sent to the brain through the normal eye, and the afflicted eye is asked to translate the message by reproducing the drawing on the opposite side of the drawing board. Thus, mental, manual and visual co-ordination is developed. This mechanical orthoptic aid endeavors to restore vision in the amblyopic eye; to link together in the visual brain centers corresponding retinal points; and to build up the fusional urge and fusional reserve.

Fireworks to Be Banned in New Jersey.—Complete elimination of the use of fireworks is the ambition of the Bureau of Explosives of the Department of Labor in New Jersey. Under the present statute, "dangerous fireworks" are prohibited from being manufactured, sold or transported in the state. Retail fireworks are offered for sale only from June 20 to July 5. Before public displays are made, bonds for not less than $3,000 nor more than $25,000 must be posted to indemnify any possible accident. Such practice

has materially reduced accidents on the national birthday in New Jersey.

Tinted Lenses Investigated.—Are the advertising claims of manufacturers of tinted lenses accurate? In behalf of the ophthalmologist who is too busy to investigate all claims for himself, W. W. Coblentz discusses, in the October *American Journal of Ophthalmology*, the properties of tinted glasses, the facts and fallacies in the claims made for them, and suggests standards for future reference. While the prescription of tinted or clear lenses lies properly in the hands of the ophthalmologist, the layman in ordering glasses is often told of the wonders of certain tinted lenses—comfort-giving, glare-absorbing, or some other special claim—and he, too, will find guidance in this balanced criticism of advertising and sales claims.

Put Protection of Eyes in Practice.—It is generally known and agreed that eye protection in industry is necessary and practicable. Yet, in the state of Ohio, according to a report of the Ohio Industrial Commission, 15,714 eyes were cut, burned or punctured during the year 1931, indicating failure to use goggles as a means of preventing eye accidents. Because adequate education of the management and of the workers in safety devices has been shown to bring as high as 80 per cent reduction in eye injuries, it is apparent that eye protection through goggles and other safety devices has yet to be made a real factor in the industrial world.

Glasses Aren't So Bad.—No matter how thoroughly mothers and grandmothers realize that glasses are necessary for conservation of the vision of a child with a visual error, none of them welcome the "blinkers," and particularly for little girls they regret the need to wear glasses. But Peggy Wood, a stage star who is as famous for her wit as for her beauty, writes in the *American Magazine* for December that "Glasses Aren't So Bad." While she sympathizes with the small wearer of glasses who must spend a long time laughing off the name of "four-eyes," she finds that glasses need not be too great a cross. Well-chosen frames may enhance the beauty of some eyes, and certainly the comfort of seeing clearly and without effort through glasses is more conducive

to eye beauty than the effort involved in squinting and straining to see without them.

New Test Chart.—A test chart which, it is claimed, may measure within an eighth of a diopter the astigmatic error of eyes, without undue fatigue to the patient or long study on the part of the ophthalmologist, has been described in the October-November *Guildcraft.*

First Aid for Eyes.—The first aid station of a small plant may be adequately staffed with a nurse, for most accidents, according to an article on "The Value of Competent First Aid," in the November issue of *Safety Engineering.* But, in the case of an eye accident, particularly of a foreign body in the eye, only a physician is competent to handle the situation. This is as true for small and apparently simple eye accidents as for those which are obviously of serious import.

For Aging Eyes.—As years go by, the heart, the lungs, and the arteries grow older and lose some of their elasticity. The eyes, too, share this gradual loss of muscle tone, and, between the ages of forty-five and fifty, most people need the aid of lenses to compensate for the lessening power to accommodate for near vision. This is known ophthalmologically as presbyopia. An editorial in the Wyoming section of *Colorado Medicine* for November urges physicians and their families to realize that this change, a normal one, is one which should be studied by an ophthalmologist, to be sure that no other eye defect or disease lurks under the mantle of middle-aged eye changes.

Electric Eye Succeeds at School.—An interesting experiment has been carried on for two years in the sixth-grade room of a public school in Tuscumbia, Alabama. An electric eye in that room controls the light switch, and, as light fades in the afternoon, or with the passing of a cloud bank, turns on the artificial light; conversely, it turns off the artificial lights as the daylight reaches certain levels of illumination. The pupils in this room have been carefully compared with the pupils of another sixth-grade room where the lights are operated manually. Although the teaching methods and the general class intelligence are the same in both groups, in the classroom where the electric eye guards the illumina-

tion the number of failures fell twenty per cent, while it remained static in the other group.

Charles L. Close.—As the REVIEW goes to press, we learn with regret of the death of Charles L. Close, a valued member of our board of editors since the first issue, appearing two years ago. Mr. Close was eminent in the safety movement in industry and an esteemed friend of the National Society. The United States Steel Corporation and subsidiary companies with which he was associated, attribute much of their success in accident prevention and in improvement of working conditions to his broad vision, his ability to organize, and his unfailing spirit of helpfulness. Beginning a career in business at an early age, Mr. Close was manager of the Bureau of Safety, Sanitation and Welfare of the United States Steel Corporation since 1911. He was one of the organizers of the National Safety Council, serving as vice-president in charge of industrial safety, and was a member of the executive committee at the time of his death. In addition to his co-operation with us on the REVIEW, Mr. Close was a member of the Society's advisory board on industrial eye hazards. Workers for prevention of blindness as well as those promoting safety in industry will feel the loss of a sincere and forceful pioneer.

National Society Notes.—The annual meeting of the National Society for the Prevention of Blindness was held on December 1 at the Russell Sage Foundation Building, New York City. Owing to the present need for economy, the usual conference was omitted. Following the general business of the meeting and the report of the president, Mr. William Fellowes Morgan, Dr. Park Lewis read a paper on "The Prevention of Blindness and the Conservation of Vision as a Co-operative Movement." This paper is being printed separately and will be sent to subscribers of the SIGHT-SAVING REVIEW.

The Executive Committee of the National Society for the Prevention of Blindness called a special luncheon meeting in honor of Mohammed Shahin Pasha, Egyptian minister of health, on September 23, 1932. Conversation centered about the work which the Egyptian government is carrying on in the treatment and

prophylaxis of eye disease, and the possibility of sending a nurse from Egypt to take special training here, with the co-operation of the National Society, in the medical social aspects of the prevention of blindness.

Staff members of the National Society have been actively co-operating with many organizations whose interests lie in related fields of public health and welfare. Mr. Lewis H. Carris, managing director of the Society, gave a talk on conservation of vision at the annual meeting of the National Rehabilitation Association, in Chicago, Illinois, on October 11. At the annual meeting of the American Public Health Association, in Washington, D. C., the week of October 24 to 27, the Society was represented by Mr. Carris and Miss Mary Emma Smith, R.N., director of nursing activities.

Mrs. Winifred Hathaway, associate director, represented the National Society at the annual meeting of the International Association for Prevention of Blindness, in Paris, on November 19. She read a paper on sight-saving classes. On this trip, Mrs. Hathaway took the opportunity of visiting the Maddox Clinic for fusion training in England; she also visited sight-saving classes in Germany, Austria, Switzerland and France.

At the invitation of the Massachusetts Department of Public Health, Miss Mary Emma Smith gave talks and demonstrations of vision testing in Salem, Bridgewater, Boston, Worcester, Pittsfield, Westfield and Hingham.

The National Society will again co-operate with the Greater New York Safety Conference in its fourth annual meeting to be held in February, 1933. The Eye Section, in which the staff of the National Society is particularly interested, promises to be of general interest to those concerned with safety and good health in industry.

Mr. Louis Resnick, director of industrial relations of the National Society, co-operated with the New York State Department of Labor in a radio talk on "What Is Being Done to Protect the Eyes of Industrial Workers? And What More Needs to Be Done?"

We are pleased to announce that Dr. Peter K. Olitsky, of the Rockefeller Institute for Medical Research, has recently accepted membership on the Advisory Committee of the National Society.

Current Articles of Interest

Effective Special Lighting Required by the Modern Printing Plant, W. N. P. Reed, *Inland Printer*, September, 1932, published monthly by Inland Printer Co., Inc., Chicago, Ill. A printer finds that central lighting in the printing plant should be subdued, with auxiliary lamps to lighten working surfaces. All printshop workers require rest for the eyes, and the softly illuminated background affords agreeable contrast. Experienced printers know more about the type of light needed at their particular jobs than do experts in lighting in the opinion of the writer.

Sight-Saving Classes in the Public Schools, Edward E. Allen, *Massachusetts Teacher*, February, 1932, published monthly by the Massachusetts Teachers Federation. A message to parents of children with defective sight interprets the importance of the sight-saving class to such children in terms of physical, educational and psychological values.

Clinical Significance of Fields of Vision, Louis Lehrfeld, M.D., *Pennsylvania Medical Journal*, October, 1932, published monthly by the Medical Society of the State of Pennsylvania, Harrisburg, Pa. Attention is drawn to the important but often neglected test of plotting the field of vision, in determining the presence and extent of certain general and localized disorders, particularly of the nervous and vascular systems; the writer outlines the physiology of the field of vision, the tests employed for its measurement, and the significance of variations of field of vision in certain general disorders.

The Eye Fundus Lesions of Nephritis, Albert E. Bulson, M.D., *Texas State Journal of Medicine*, October, 1932, published monthly by the State Medical Association of Texas, Fort Worth, Texas. The retinal lesions found in nephritis are only part of the clinical picture; they become diagnostic when aligned with the findings of blood pressure, heart, and urine examination. Since eye lesions

often antedate all other symptoms, the ophthalmological examination has a special rôle in prevention of acute nephritis.

Controlled Reading, David W. Wells, M.D., *American Journal of Ophthalmology*, June, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. A description of a device for reading which forces both eyes to read simultaneously. This method has the advantage over stereoscopic exercises in that it may be used for all reading purposes until the fusion reading habit is firmly established.

Neurologic Features of Pernicious Anemia, Richard H. Young, M.D., *Journal of the American Medical Association*, August 20, 1932, published weekly by the American Medical Association, Chicago, Ill. From the records for 18 years of patients with pernicious anemia reporting to one hospital, a study of the less obvious neurologic lesions has been made. Among these are the eye symptoms. Eleven per cent of patients having ophthalmological examination showed retinal hemorrhage; 80 per cent of these had psychotic manifestations. Other ocular features were optic atrophy, nystagmus, and alterations in the pupils.

Headaches of Ocular Origin, Charles A. Bahn, M.D., *New Orleans Medical and Surgical Journal*, September, 1932, published monthly by the Louisiana State Medical Society, New Orleans, La. Because the visual mechanism is at least partially responsible for nearly 40 per cent of all chronic headaches, an ophthalmic study has particular value. Location of the headache may furnish a clue to its origin; astigmatism causes more severe and more frequent headaches than the other refractive errors, which, however, are the most frequent ocular cause of headache. Light exposure may cause headaches of great severity; in middle life, glaucoma is a relatively frequent cause of headaches. Those internal diseases causing headaches, such as syphilis, diabetes and nephritis, may be found apparent in the eye-grounds.

Some Observations on the Treatment of Interstitial Keratitis, R. H. Cowley, M.D., *Kentucky Medical Journal*, August, 1932, published monthly by the Kentucky State Medical Association,

Bowling Green, Ky. Interstitial keratitis is not a disease but a symptom; while syphilis is the most common cause, the physician, in the absence of this origin, should consider tuberculosis and focal infection.

Dietary Deficiency and Ocular Disease, I. S. Tassman, M.D., *Archives of Ophthalmology*, October, 1932, published monthly by the American Medical Association, Chicago, Ill. The delicate relationship between vitamin deficiency, and, in particular, vitamin A deficiency, and the epithelial structures of the eye is outlined, with references to various research projects and to clinical studies in the literature of nutrition and ocular pathology. The effect of lack of vitamin G is also shown, and suggestions are made for correcting such dietary deficiencies.

Etiology of Trachoma With Reference to Relationship of *Bacterium Granulosis* (Noguchi) to the Disease, Ida A. Bengtson, *Public Health Reports*, September 16, 1932, published weekly by the United States Public Health Service, Washington, D. C. A review of the literature on the subject of the isolation of *Bacterium granulosis* from trachoma in many parts of the world shows a wide variation in the results obtained. Despite the disparity of the findings of the various students of trachoma, it is conceded that the finding of *Bacterium granulosis* in this country and in certain other parts of the world merits its consideration as a possible etiologic factor in trachoma. More efficient methods of demonstrating the organism are greatly to be desired.

Hereditary Blindness, Lewis H. Carris, *Journal of Heredity*, August, 1932, published monthly by the American Genetic Association, Washington, D. C. In any catalogue of the major causes of blindness, heredity plays a rôle. While it may be assumed that only one in ten thousand is blinded through inheritable causes, it is important for the social and medical student to know those types of blindness that may be transmitted. A list of the hereditary causes of blindness is given.

The Eyes of School Children, Edward Jackson, M.D., *American Journal of Ophthalmology*, October, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. The importance

of testing the eyes of preschool children is emphasized in this paper, and the technique of making group tests outlined. Ophthalmologists are urged to institute these early vision tests for the greater education of the laity in conservation of vision.

The Modern Conception and Treatment of Comitant Strabismus, William Thornwall Davis, M.D., *Kentucky Medical Journal*, August, 1932, published monthly by the Kentucky State Medical Association, Bowling Green, Ky. Because squint can be fully cured only in the early years, the author recommends that serious attention be given the first signs of cross-eye. Occlusion may be undertaken during infancy, correction by refraction as early as the toddler stage. If the squint is not too pronounced, fusion training may effect a cure, and operation by the Jameson recession is recommended as a reliable operation. For the best interests of the child, both educationally and emotionally, correction of squint should begin well before school age so that the child may enter school without this emotionally painful handicap.

Putting Clearness Into Safety Glass, A. F. Randolph, *Safety Engineering*, September, 1932, published monthly by the Safety Magazine Publishing Corporation, New York, N. Y. Because safety glass may prevent many accidents to the eyes, as well as to other parts of the body, its improved manufacture—involving reliable visibility and stabilized color, as well as clarity—is of particular importance to those concerned with the prevention of blindness. The use of this glass is not confined to automobiles, but extends to machine guarding, unbreakable goggles for industrial eye protection, and glasses for active sports wear.

Public Health Education: The Functions of the University and of the Private Foundation, John Sundwall, M.D., *Public Health Reports*, October 7, 1932, published weekly by the United States Public Health Service, Washington, D. C. Since we cannot deal effectively through legislation and regulation with the innumerable factors involved in individual health conservation, education is the most effective weapon. The rôle of universities, foundations, commercial firms and insurance companies in broadcasting health

information and education to the public is evaluated as being that of leadership in the actual work of service and education.

Light-Sense, Percy W. Cobb, M.D., *American Journal of Ophthalmology*, October, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. The simplest visual stimulus requires not less than four terms for its description: the brightness of the figure; the brightness of the background; the size of the object; and the time of action of the object. Tests of light-sense are the brightness-difference test and the dark-adaptation test, of which the latter alone has shown reliability. The writer outlines details of method in making this test and precautions towards insuring uniformity in the results.

The School Nurse's Part in Conserving Sight, Mary Emma Smith, R.N., *Public Health Nursing*, September, 1932, published monthly by the National Organization for Public Health Nursing, Inc., New York, N. Y. Outlining objectives in a sight conservation program in school, the writer suggests: providing an environment which will not cause deterioration of the vision of the pupils; determining whether the child's eyes are normal; instituting corrective measures and treatments for those found to be defective; building up in the child certain knowledge, attitudes and practices that will result in the best physical and mental health possible. Opportunities for the nurse to co-operate with the school and the medical profession in conserving sight are suggested.

Headache in Relation to the Eye, Ear, Nose and Throat, Grace Tankersley, M.D., *Journal of the Arkansas Medical Society*, August, 1932, published monthly by the Arkansas Medical Society, Little Rock, Ark. Headache, a symptom found in every branch of medicine, demands careful study as to its cause. The relation between eyestrain and headaches, first pointed out by Donders, plays a primary part in diagnosing the cause of headaches, since from 40 to 70 per cent of headaches may be caused by the eyes. Refractive errors are the primary cause of ocular headaches; often small refractive errors cause greater suffering than gross errors. Overstimulation of the retina through excessive light will cause headache, while incipient glaucoma may cause headaches, often

ignored by the sufferer, thus preventing early discovery of this disease.

"See"-Levels in Lighting, M. Luckiesh, *Electrical World*, August 20, 1932, published weekly by McGraw-Hill, New York, N. Y. Defining the process of seeing as the relationship between the external light, the visual apparatus and the brain, the writer urges the promotion of better lighting in the industrial world to secure the "efficiency, behavior and welfare of human beings as human seeing machines."

The Normal Eye, W. R. Dunstan, M.B., *Medical Officer*, September 10, 1932, published weekly by the Medical Officer, London, England. A study and evaluation of the research made on the normal eye by the special committee designated to inquire into defective vision in school children, as well as of other work done in this same field. Further study in groups of infants and preschool children is recommended before any definition of normalcy may be found.

Glaucoma, D. M. Yazujian, M.D., *Journal of the Medical Society of New Jersey*, September, 1932, published monthly by the Medical Society of New Jersey, Orange, N. J. As with electricity, we are able to recognize glaucoma but we have not yet been able to explain what it is. In this article, the disease is outlined as to its course, its possible medical treatment and its surgical arrest. The author would consider as suspicious of glaucoma all cases of redness of the eyeball, blurry vision and headache in persons approaching and past middle age.

Ocular Exercises, Adolph O. Pfingst, *Kentucky Medical Journal*, September, 1932, published monthly by the Kentucky State Medical Association, Bowling Green, Ky. Because ophthalmological opinion is hastening to refute the claims of medical quacks that eye defects may be corrected by exercises, without the use of glasses, the writer urges the profession not to overlook the value of careful study of the oculo-motor apparatus in eye defects. Quoting Donders and Duane as authorities for consideration of the muscles in eye disturbances, he reminds ophthalmologists that

disorders of the muscular apparatus may play an important part in vision defects.

Complications of Cataract Surgery in India, Louis Bothman, M.D., *Illinois Medical Journal*, September, 1932, published monthly by the Medical Profession of Illinois, Oak Park, Ill. In a report dealing with one thousand cataract operations at the Seth Hilarand Hospital in Shikarpur, Sind, India, the technique and routine of operation are described. Despite the meager facilities of the hospital, the ignorance and superstitious fear of the patients, and the crowded conditions, the sight of nearly all the patients was restored to the point of ambulatory usefulness. An interesting comparison is made between the figures of these thousand cases and a series of three hundred analyzed by Dr. Arnold Knapp.

Understanding the Myopic Child, F. A. Aylesworth, M.D., *Serving Sight*, October, 1932, published by the Canadian National Institute for the Blind, Toronto, Ont. Although myopia may occasionally be hereditary, it is generally attributed to environmental causes in childhood, such as poor lighting, concentrated study, and uncorrected hyperopia in early childhood. Once the condition is established it tends to increase, even when corrected by glasses; in the case of severe myopia, in addition to correction by glasses the eye care and rest possible in a sight-saving class may be the method of procedure.

Researches in Seeing, M. Luckiesh and Frank K. Moss, *American Journal of Ophthalmology*, September, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Sight, being more than the activity of the optic apparatus, must of necessity include the factor of light. Daylight represents illumination values far above those of the average artificial lighting installation, and efforts should be made to approximate the daylight levels. Proof of the value of sufficient light is seen in the results of an experiment, when, with an illumination increase from three to 12 foot-candles, in a group with good sight the working capacity increased 14 per cent, while in the group with poorer sight the working capacity increased 22 per cent. The

authors conclude that attention to proper lighting benefits particularly those whose need is the greatest, the visually handicapped.

Preventive Medicine as Applied to Diseases of the Eye, A. Edward Davis, M.D., *American Medicine*, October, 1932, published monthly by the American Medical Publishing Company, Inc., New York, N. Y. The ideal of preventive medicine is to have the well person take care of his health. This is particularly true in relation to the eyes. Ophthalmia neonatorum has been greatly reduced since the concerted movement to prevent this cause of blindness; trachoma, too, has fallen off in this country as a cause of blindness, with the regulation of immigration laws and the increased general knowledge and practice of hygiene. Glaucoma and cataract are diseases of the eye still to be combated, and every ophthalmologist examining a middle-aged person should look for any incipient signs of these diseases. With thorough medical eye examinations at periodic intervals, the use of the eyes may be preserved throughout life.

Industrial Eye Injuries and Compensation Claims Arising Therefrom, Elbert S. Sherman, M.D., *Journal of the Medical Society of New Jersey*, October, 1932, published monthly by the Medical Society of New Jersey, Orange, N. J. A summary of the practical guide for determining loss of vision and liability in eye accident cases, which was formulated for the Medical Society of New Jersey in 1924. The writer explains the purpose of the guide and its application in protection of the injured workman and of the employer against false or excessive claims.

Primary Glaucoma Management, Michael Goldenburg, M.D., *Illinois Medical Journal*, October, 1932, published monthly by the Medical Profession of Illinois, Oak Park, Ill. Since no operation can remove the cause of glaucoma, the author cannot consider operation as a cure. He finds that the various decompression operations offer a more positive avenue of fluid escape and in addition favor fresh aqueous formation. The iridotasis operation accomplishes this result and with less danger, because of its simplicity.

Ocular Symptoms of Faulty Illumination, Walter B. Lancaster, M.D., *American Journal of Ophthalmology*, September, 1932, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Insufficient light or glare, both common faults of illumination, causes the eye to make unusual effort to gain precision in fixing and focusing on the matter under observation. The writer sets forth accepted opinions on the subject, as well as his own studies.

Book Reviews

COLLECTED REPRINTS FROM THE WILMER OPHTHALMOLOGICAL INSTITUTE OF THE JOHNS HOPKINS UNIVERSITY AND HOSPITAL. Volume I, 1925 to 1929, inclusive. Volume II, 1930 to 1931, inclusive. Baltimore: Johns Hopkins University. Ill.

It has been the custom of many great hospitals to publish in an annual or an occasional volume the worth while publications of its staff. If the group happens to include men of great originality or even of genius, the Pasteurs or Harveys of their time, these volumes become of the greatest interest and even of historic value.

But medicine, which is an art based on a science, changes so fast that contributions which seemed outstanding at the time of publication rapidly become outmoded and commonplace.

Volume after volume of these ancient reports may contain nothing of historical or scientific interest or of social value, while, in a relatively few, outstanding contributions are buried between others which the passage of time has converted into veritable trash.

This was particularly true of the days in which medicine and surgery were almost entirely clinical. We have reports which modern pathology has made ridiculous, and operations which were in their time monuments to the daring of the surgeon and the fortitude of the patient, but which modern resources have made simple and safe and painless, or even entirely unnecessary.

Then, too, as medicine has become more scientific and has required more and more years of laborious poring over theories and confirmation of facts, it has become less and less intelligible and interesting to the untrained mind of the layman. If these two volumes were filled entirely with medical and surgical contributions I should not think of reviewing them for the readers of what is, after all, a lay journal. But they also contain the story of the inception and foundation of one of our great institutions, and of dramatic personalities and sequences which have caught the public imagination as did the work of Grenfell in Labrador, or the Mayos in Minnesota.

We have the whole story in the first volume, told by those who

knew: of the young surgeon and his wife with their churchly ancestry, who mutually agreed to live the life of service in which money was to play a very minor part; and of his skill and tact and kindness which endeared him gradually to countless patients of high and low degree, but did not seem likely to bring him more than local fame. For these are the qualities that remain unsung in countless country parsonages and settlement houses and slum hospitals. But, when there is added to these the indefinite something we call personality—the unconscious instinct to lead, to dramatize things and to catch the public eye, which strangely enough is often found in the very shy and modest, and especially when it is aided by a devoted group of unusual friends—then things begin to happen.

The story is full of human interest. There came to Dr. Wilmer, in what might be called the afternoon of his life, a very unusual woman who was saved from what seemed inevitable blindness; during her long convalescence she was impressed by the personality of her surgeon, by his skill and selflessness and by his ability to build up *esprit de corps* among those about him.

It seemed to her a pity that he should not have a larger institution, where many more people could have the help she had had, and where he could inspire in others his skill and his ideals. And so she conceived the whole idea and proceeded to put it into effect. When she requested a list of patients who might be asked to join her, he flatly refused to have anything to do with it, and it was only by taking into her confidence his white-headed old colored doorman that she was gradually able to build up such a list.

To her gifted touch the money came so easily and friends were so enthusiastic that it seemed a pity to stop at the limit of her original dream. One of the great foundations was appealed to and, with the canny instinct of such groups, decided that it would be a waste of money to finance a plan that would be sure to languish and die as soon as the figure about which it was built should pass away. But they thought the idea itself had merit, and, if Dr. Wilmer would consent to join forces with a university, with its corporate gift of everlasting life, they could and would and did take a very active part.

And so the Wilmer Institute became the ophthalmological depart-

ment of Johns Hopkins University, and its director proceeded to gather about him the men who should make his project well rounded and complete.

The contributions here gathered together are intended to give some idea of the Institute, its sponsors and supporters, and of the staff and of the kind of work each of them is especially interested in.

The dedicatory exercises included an address by the great Viennese ophthalmologist, Fuchs, perhaps the greatest name of his day, a simple, kindly, lovable old man, on the development of ophthalmology in Europe, much of which he saw, and a great part of which he was; and one by de Schweinitz, the dean of American ophthalmology, on its development in America. These two any layman could read and enjoy. Then came an address by Sir Herbert Parsons of England, who chose a more technical subject, which is followed by a hundred or more contributions by the staff, which do not lend themselves to review in any but a technical journal. Some of them are clinical: rare cases with their pathology and treatment; improved methods of handling the commoner diseases, like glaucoma and cataract; descriptions of operations and instruments and the like. Some of them are pure science: studies of ocular chemistry, the physiology of vision, the mathematical studies associated with lenses and optical instruments. Others are of social rather than medical interest: hospital efficiency and management; ophthalmology in relation to public health; military ophthalmology and the like.

Some of them are already almost out of date in the few years since they were written, while others seem still ahead of their time. The pure science studies, if not of immediate practical value, are filed away in the storehouse of knowledge, where perhaps they will fit in with others yet to come and be of the greatest importance.

The future reports of the Wilmer Institute may or may not contain more impressive records of scientific progress. Some of the younger members of the staff, if they fulfill their promise, may in time reach the heights; but it is unlikely that any future volumes will contain more of human interest than do these.

ELLICE M. ALGER, M.D.

THE RELATIVE MERITS OF CURSIVE AND MANUSCRIPT WRITING. Thelma G. Voorhis. New York: Columbia University, Lincoln School of Teachers College, 1931. 58 p.

For the person at all interested in manuscript writing this book merits attention. It is in reality a summary of the findings of investigations which have been made regarding manuscript writing, and the conclusions drawn through studying it in comparison with cursive writing. In it Mrs. Voorhis has given us a brief history of writing and the results of various experiments which have been carried on since manuscript writing was introduced into the United States some ten years ago. She has also described to us in detail her own experiment to determine the influence of manuscript writing on beginning reading.

Her experiment was conducted in six first-grade classes in Public School No. 215, Brooklyn, N. Y., throughout the school year of 1928–1929. The six groups (195 children) taken for the experiment were chosen, as nearly as was possible, on an equal basis in respect to age, intelligence, and reading status. The classes received identical instruction in reading and all other subjects except hand-writing. In that, three groups were taught the cursive and three the manuscript writing. After the initial tests were given in equating the groups, before starting the experiment, surveys were made twice during the year, in April and January, and then again at the close of the school year in June. The tests used to determine the progress made were standard tests—the Detroit Word Recognition Test A and Gates Primary Reading Tests, Forms I and II. In so far as the experiments were conducted under the same conditions, except for the kinds of writing taught, Mrs. Voorhis draws her conclusion that any difference in the results obtained may be attributed to the difference in the writing. She says, "All the data from this investigation indicate that manuscript is distinctly superior to cursive writing in the facilitation of beginning reading." Proof for her statement is given through figures comparing the results of the tests given to the two groups.

While, as the author herself has suggested, experiments with such small groups are not highly reliable, and the results cannot be taken as positive evidence, they are nevertheless suggestive of

the general trend. It is certain that they bring facts before our minds that are worthy of our careful thought and consideration.

To those who are especially interested in the sight-saving class child the book gives a feeling of satisfaction. If manuscript writing does all for the normally sighted child that the experiment tends to show, then it must more firmly establish our faith in its value for the child with seriously defective vision.

ERMA GRILL

PROBLEMS IN THE TRAINING OF CERTAIN SPECIAL-CLASS TEACHERS. Contributions to Education, No. 475. Louis M. Schleier. New York: Teachers College, Columbia University, 1931. 145 p.

In *Problems in the Training of Certain Special-Class Teachers*, Dr. Schleier presents for the first time in one publication all of the existing material which has been published on this subject and also information concerning present practices and recommendations for teacher training programs.

To those who desire to know the laws of the states pertaining to the education and training of both mentally and physically handicapped children in the public schools, the rulings of state boards of education relative to the preparation of teachers of such classes, the courses and curricula now offered in various institutions of higher learning for the preparation of teachers and supervisors of special classes, and the proposed teacher training program for teachers of mentally and physically handicapped children in the public schools, this book will prove of exceptional value.

The various tables showing accumulated data on the different phases of the subject studies are intelligible and explicit. The summary at the close of each chapter briefly, yet clearly and completely, reviews the contents. A useful addition to the book is the bibliography and appendices, which seem to be most complete. In fact the entire book would give definite information on all the investigations made.

MATIE M. CARTER

THE EYE, EAR, NOSE AND THROAT, PRACTICAL MEDICINE SERIES, 1931. E. V. L. Brown, M.D., Louis Bothman, M.D., George E. Shambaugh, M.D., and Elmer W. Hagens, M.D. Chicago: The Year Book Publishers, Inc., 1932. 629 p.

This volume, one of the eight compiled on the year's progress in medicine and surgery, is divided into two sections. The eye section edited by Dr. E. V. L. Brown and Dr. Louis Bothman, occupies approximately half of the book. It offers the reader an excellent review of the eye literature of the past year. While special emphasis has been placed upon foreign periodicals, particularly the German, due attention has been given to English and American contributions. An attempt has been made to include only the most important, interesting and instructive original articles.

The arrangement presents the eye by sections, following the procedure in most textbooks, and includes Embryology, Physiology, Therapeutics and Operations. Each article is under the author's title in bold type and a footnote records the magazine in which the original appeared. Reference is further facilitated by a general index and an index of authors. Each review is brief and to the point, covering the main points of the paper, but avoiding detail. Editorial comment, which is purposely brief, is interjected here and there and is plainly marked.

For the average ophthalmologist, this book is an excellent complement to his general medical library. With the exception of the more available domestic periodicals, the latest literature will be found to be well represented. The inclusion of the many foreign articles is especially valuable to those who do not have access to large medical libraries or find difficulty in obtaining translations.

The scope of the work necessarily limits the space devoted to any one article, but the reader will find each review sufficiently comprehensive to familiarize him with the subject under consideration, and the more thorough investigator will be enabled to decide whether the original need be consulted.

The volume is published yearly and includes reviews of the literature for one year up to the previous July.

WILLIS S. KNIGHTON, M.D.

Briefer Comment

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH, CITY OF BALTIMORE. Baltimore: 1931. 300 p.

Concomitant with the complexity of modern urban life is the need for a widespread and effective control of health, not only as an individual problem, but as a social and community project. Exemplifying the wide scope of the modern health project is this report of the work being done in the city of Baltimore for the control of communicable diseases, diagnosis and care of the tuberculous, child welfare (which includes maternal and infant care), school hygiene and public health nursing, to mention only the major headings of the program. The fact that the eyes and their conservation are mentioned as part of each program indicates the broadness of the prevention of blindness problem.

SIXTH ANNUAL REPORT OF THE GIZA MEMORIAL OPHTHALMIC LABORATORY, DEPARTMENT OF PUBLIC HEALTH, MINISTRY OF THE INTERIOR, EGYPT. Cairo: Schindler's Press, 1932. 126 p.

As interesting to the layman as to the ophthalmologist and the scientist is the report of the Giza Memorial Ophthalmic Laboratory. The work in controlling trachoma and purulent conjunctivitis, which are so prevalent in Egypt, is explained; research into the cause of trachoma continues to hold the attention of the medical and scientific world. Three projects of interest were undertaken during the past year. A study was made, empirically, of the relation of nutrition to the incidence of trachoma; among Egyptians, very little influence could be demonstrated. In the attempt to prevent the development of trachoma among children, the entire population of one village were given supplies of prophylactic drops which, it was hoped, might prevent the development of the disease; unfortunately, the ignorance and indifference of the people caused this effort to be abandoned until education has aroused a greater sense of responsibility. The third project was the visit of the director to the United States to study trachoma in the American Indian; the report stated that there were marked dissimilarities between the trachoma found in Egypt and that found in the United States.

LIGHT THEN AND NOW. Ida Belle Lacey. New York: The Macmillan Company, 1930. 209 p. Ill.

The story of artificial illumination, from the days of the cave dwellers through the ages, to our animated electric signs, our street lighting and our interior lighting. The text is well suited to the younger elementary school child, interestingly told and factually accurate. The large type and the simple and clear illustrations, both by photograph and by sketch, would give it a place in the school library.

SAFETY EDUCATION. Florence C. Fox. Bulletin No. 8, United States Office of Education. Washington: United States Government Printing Office, 1932. 73 p.

We can make the world a safer place for children by building playgrounds and play streets, providing supervision of play and inspiring safe games; yet, without the full and wholehearted co-operation of the children themselves, none of these artificial safeguards has a permanent value. This full study of the methods of making safety a well-learned lesson in childhood is a valuable contribution to the problem of protection, both present and future. The child who has learned the valuable lesson of caution and control will not lose his sense of responsibility as an adult.

THIRTY-FIRST BIENNIAL CONVENTION, AMERICAN ASSOCIATION OF INSTRUCTORS OF THE BLIND. New York: New York Institute for the Education of the Blind, 1932. 815 p.

Although many of the papers at this five-day conference were concerned with the progress of education for the blind, the eminent personalities in the history of the education of the blind, and the tools of education for the blind, its president, sounding the keynote of the new outlook for the blind, said: "The first right of a blind person is not to be blind." The progress in ideas for education of the blind is made startlingly apparent in its history, with the shift from the ideas of protection and asylum to present-day methods of training sightless persons to take their place in the everyday world without fear or undue handicap.

Eighteenth Annual Report for the Ophthalmic Section, 1930, Department of Public Health, Ministry of the Interior, Egypt. Cairo: Government Press, 1931. 40 p.

The number of ophthalmic units under the supervision of the Egyptian government is now 46, of which 14 are traveling and 32 stationary, and the increase in the number of patients and the treatment is proportionately greater for the year 1930. Among the interesting figures concerning eye disease and defect found in the Egyptian eye clinics, and the causes of blindness, as compiled in the clinic records, is the fact that of 11,717 school pupils whose eyes were examined 92 per cent were found to be suffering from trachoma. Although 25 per cent of these were in the serious stages of the disease, after treatment was instigated the percentage fell to eight. This work not only cures those suffering from trachoma but, through the destruction of the active follicles, helps to prevent its spread.

State Requirements for Industrial Lighting; A Handbook for the Protection of Women Workers, Showing Lighting Standards and Practices. Marie Correll. Bulletin No. 94, Women's Bureau, United States Department of Labor. Washington: United States Government Printing Office, 1932. 65 p.

Although it is conceded, theoretically, that studied lighting reduces accidents, wards off eyestrain, and improves efficiency, the adoption of adequate lighting plans in industrial places has not been widespread. In this analysis of the code for lighting factories, mills and other work places, the issues and the benefits to employer and employee are concisely stated. A detailed study of state standards and practices demonstrates the general inadequacy of state lighting laws, most particularly in those states not considered manufacturing. The adoption of adequate state lighting codes, their enforcement, and the co-operation of employers would definitely bring closer the goal of vision conservation and optimum health standards.

How the Teacher May Help the Exceptional Child. Charles Scott Berry. Ohio State University, 1932. 23 p.

This pamphlet of suggestions to the teacher who has in her class of "normals" an exceptional child is particularly dedicated to those

teachers in whose school community there are no special classes. Pointing out the mental hygiene aspect of the teacher's special knowledge of handicaps and exceptions, and the economic value of educating exceptional children so that they may compensate for their handicaps, the writer makes practical suggestions as to methods of procedure with children of all types. A thoughtful bibliography concludes each chapter.

PARENTS' PROBLEMS WITH EXCEPTIONAL CHILDREN. Elise H. Martens. Bulletin No. 14, United States Office of Education. Washington: United States Government Printing Office, 1932. 72 p.

Out of the White House Conference on Child Health and Protection, and particularly from the meetings of the section on exceptional children, has come this sound and practical handbook for parents on educational and guidance practices for the out-of-the-ordinary child. Including in its scope all unusual children—the physically handicapped, the bright, the dull, the antisocial—this contribution should prove of help and comfort to bewildered parents in its sanity and its practical grasp of realities.

AN EXPERIMENTAL STUDY OF THE EDUCATIONAL INFLUENCES OF THE TYPEWRITER IN THE ELEMENTARY SCHOOL CLASSROOM. Ben D. Wood and Frank N. Freeman. New York: The Macmillan Company, 1932. 214 p. Ill.

Since children of today are born into a machine-run world, it seems sound theoretically that they should utilize machines as educational aids. That this theory may work out successfully in practice is the argument of this book. Two years of experiment, in 27 schools, among 6,125 pupils, showed that the typewriter, introduced as an implement in the educational environment, has a permanent place. The typewriter has been demonstrated to be not only an aid to writing, but a stimulant to written expression and an aid to reading, since the young reader is not confronted with two typographical systems; and it increases interest and output in all types of assignments in the school curriculum.

Contributors to This Issue

Dr. Shirley W. Wynne, commissioner of health of the City of New York, is nationally known for his accomplishments in the field of municipal health.

For the past two years, **Miss Mary Emma Smith, R.N.,** director of nursing activities of the National Society, has been giving demonstrations throughout the country of methods of testing the vision of little children. **Miss C. Edith Kerby,** who collaborated in the survey, is statistician for the Society.

Dr. J. Guy Jones, who is instructor in clinical ophthalmology and oto-laryngology at Baylor University and a practicing eye, ear, nose and throat physician in Dallas, Texas, is known in scientific and industrial circles for his interest in industrial ophthalmology.

Dean of ophthalmology in France, **Professor F. de Lapersonne** serves as president of the International Association for Prevention of Blindness and of the French national committee.

Miss Mary E. Stebbins, as supervisor of the Department for Prevention of Blindness of the Missouri Commission for the Blind, appreciates the importance of good light for vision testing.

As chief of the eye service of the Presbyterian Hospital in New York City, **Dr. John M. Wheeler** has observed the value of medical social service in eye work. Dr. Wheeler is professor of ophthalmology at the College of Physicians and Surgeons, Columbia University.

Among the book reviewers: **Dr. Ellice M. Alger** is professor of ophthalmology at the New York Post Graduate Medical School;

Miss Erma Grill is a sight-saving class teacher in Saginaw, Michigan; **Miss Matie M. Carter** is supervisor of sight-saving classes, State Education Department, New York; **Dr. Willis S. Knighton** is a practicing oculist in New York City and on the staff of the New York Eye and Ear Infirmary.

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